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ABSTRACT

This guide contains materials for use in conducting a 10-hour classroom and laboratory course to train individuals in the safe administration of nonparenteral medications in a 15-bed or smaller residential facility for mentally retarded persons, a child care facility, or a supervised apartment living setting. The guide begins with a course rationale and outline. Presented next are the course's five units, which cover the following topics: Iowa and federal laws and controlling agencies; general information about nonparenteral drugs; selected drug families (analgesics, central nervous system stimulants, drugs to relax tension and produce sleep, drugs controlling seizure activity, drugs affecting individual systems of the body, and miscellaneous drugs); and clinical evaluation. Each unit contains some or all of the following: overview, objectives, introduction, student handouts, and study questions. Also included in the unit on selected drug families are tables detailing the following information on each of the 15 drug families discussed: action/systems affected, general precautions, brand (generic) name, usual dosage and administration route, whether the drug is a controlled substance, side effects, and special precautions. Concluding the guide are a 13-page glossary and drug index. (MN)

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ED 371 131

MEDICATION MANAGER

FOR

CHILD CARING FACILITIES

MR (LESS THAN 15 BED FACILITIES)

SUPERVISED APARTMENT LIVING

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Available from:

Program in Health Occupations Education
The University of Iowa
487 Lindquist Center North
Iowa City, IA 52242-1529

Medication Manager Course
for
MR Facility/Child Caring Facility/Supervised Apartment Living

Total 12 Hours
10 hours plus
clinical or laboratory
supervised by an R.N.

Course Description
This 10 hour class plus clinical or laboratory course is designed to prepare individuals to safely administer nonparenteral medications in a 15 bed or less MR (mental retarded) residential facility, a child caring facility, or supervised apartment living. Emphasis is placed on safely administering medications from a prescription bottle and observing for obvious reactions to the medications.

Course Approval
This course has been approved by State of Iowa Board of Pharmacy Examiners, the Iowa Department of Inspections and Appeals, and the Iowa Department of Human Services.

Pre-requisites
None

Competency
Safely administer nonparenteral medications in specified facilities that acknowledge the medication manager.

Performance Objectives Required to Attain Competency

1.0 List the legislative requirements associated with medication administration.
2.0 Describe the role of the medication manager.
3.0 Identify required methods for drug storage/disposal.
4.0 Define terms associated with drug administration.
5.0 Differentiate between different drug preparations including precautions for administration.
6.0 List the six rights of medication administration.
7.0 Identify information medication manager must know prior to administering medications.
8.0 Demonstrate correct procedure for safe administration of nonparenteral medications.

Method of Assessment

1. Eighty percent (80%) or better on a 50-100 questions final for cognitive.
2. Satisfactory completion of laboratory or clinical experience check list. Must be supervised by an R.N. for performance.

Certificate

When all criteria under "Methods of Assessment" have been met, the Area College will award a certificate of successful completion. This certificate permits successful completers to administer medications in accordance with curriculum guidelines in any licensed residential care facility for the mentally retarded of fifteen (15) beds or less, child caring facility or supervised apartment living.

JB/kb
6-30-86

Revised '87
Revised '92

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INTRODUCTION

Medication Manager

Rationale and History of the Course

Iowa Rules (620, Chapter 8, p. 5) require all persons who administer controlled substances and are not licensed (e.g., RN, LPN) to successfully complete an approved course. By rule, the course is to be approved by the Iowa Board of Pharmacy and the Iowa Department of Health, Division of Health Facilities.

In 1976 a Medication Aide course was developed for geriatric nurse aides administering oral medications in long term care facilities. This course was revised and increased to 40 hours in 1978. A handbook for students was developed. The original course, subsequent revisions, course pre-requisites, course requirements and Handbook were all approved by the Iowa Board of Pharmacy and Iowa Department of Health.

In 1979 a ten hour Medication Manager course was developed for certified residential attendants who administered medications in 15 or less bed residential care facilities. The course, pre-requisites and requirements were approved by the Iowa Board of Pharmacy Examiners and Iowa State Department of Health, Division of Health Facilities.

In 1982, a committee from the Coalition for Family and Children Services in Iowa met with representatives from Iowa area schools and Program in Health Occupations Education and developed pre-requisites, recommended course content and objectives, and established criteria for a course for Medication Administration in Child Caring Facilities. This material was submitted to the Iowa Board of Pharmacy, Iowa Department of Health, Division of Health Facilities and Iowa Department of Social Services, Bureau of Children Services for approval. The IDSS became involved in this course because they are the State agency the licenses child caring facilities (rule: 770, Chapter 114, p. 11). The course was approved by these agencies. Copies of the approval letters are available from the Program in Health Occupations Education or the Coalition for Family and Children Services.

In 1983, the Human Services Department identified another group who would be supervising the administration of medications in "supervised apartment living." The Department determined the competencies included in Medication Manager were the same competencies required for persons supervising persons in "supervised apartment living."

In 1992 it was agreed that since all three medication manager courses required the same competencies with exception of specific rules and regulations for each type of facility, that the course could be taught as one. The Handbook will include rules/regulations for all three types of facilities. It will be the responsibility of medication manager to become familiar with the specific rules for their type of facilities and the facility policies.

MEDICATION MANAGER COURSE

Unit I Examine the role of laws and controlling agent related to safe administration of nonparenteral medications

Teaching Time: Approx 45 min

OBJECTIVE	CONTENT	METHOD
1.01 Discuss past and current legislation that controls the who, how and where of drug administration.	I. Legal and Board Control A. Role and responsibility of medication manager.	Personal inventory completed by each student. Handout "Medication Manager." Job descriptions. Lecture--discussions.
1.01.01 Explain the difference between legend and non-legend drugs.	B. Legal and Agency Controls. 1. Federal, Food, Drug, Cosmetic Act. a. Prescription-legend drugs. b. Non-prescription drugs	Display of prescription and nonprescription drug containers. Handout on various laws.
1.01.02 Explain why certain drugs are classified as "controlled substances," listing the schedules and identifying common drugs within each schedule.	2. Controlled Substance Act. a. Scheduled drugs. b. Examples of drugs in each category. c. Storage of controlled substance.	Poster--PDR
1.01.03 Identify rules and regulations of controlled substance act and explain what they require of the person supervising/administering medications.	d. Management of controlled substance.	Demonstration.
1.02 Explain how the role of medication manager evolved and describe the tasks and responsibility of the medication manager.	3. Iowa Department of Inspections and Appeals. 4. Iowa Board of Pharmacy. 5. Iowa Department of Human Services. a. Child caring. b. Supervised apartment living.	Handout. Pharmacists speak to class regarding contractual agreement they have in the facility.

Unit II Discuss general information related to the administration of nonparenteral medications and explain how this information assists the medication manager in safely administering nonparenteral medications.

Teaching Time: 2-4 hours

OBJECTIVE	CONTENT	METHOD
2.01 Examine the role of health professionals in preparation, prescription and administration of medications.	I. General Information A. Role of drug personnel for drug administration. 1. Physicians. 2. Pharmacists. 3. Medications Manager.	Discussion
2.02 Describe how drugs are commonly stored, noting all licensing requirements for RCF-MR/child caring and how these are met, differentiating between controlled and noncontrolled drugs.	B. Prescriptions and dosages. C. How medication orders are transmitted. 1. Medical log. 2. Prescription bottles.	Display of different types of prescriptions. Handouts-information required; how and who completes these; licensing requirements.
2.03 List and give examples of drug sources, reasons why drugs are given and some good resources that give information about drugs.	D. Storage of medications. 1. Medicine cabinet. 2. Drugs kept in refrigerator. 3. Controlled substances.	Rules and regulations for each type of facility.
2.04 Examine reasons why drugs are given. Give an example of a drug given for each reason.	E. Reasons drugs are given. 1. Maintain health. 2. Prevent disease. 3. Relieve symptoms. 4. Cure disease. 5. Replacement therapy.	Discussion. Each student presents case study of one resident--drugs they are taking, explaining reason for each drug
2.05 Define and explain the assigned list of abbreviations and symbols related to drug administration.	F. Abbreviations and symbols used in drug administered.	Handout. Worksheet.
2.06 Define the assigned list of terms that are used to describe drug actions.	G. General terms used in describing drug administration. 1. Action. 2. Side effects. 3. Toxic effect. 4. Nursing precautions. 5. Cumulative effect.	Handout. Lecture-discussion.

OBJECTIVE	CONTENT	METHOD
	6. Contradindications. 7. Allergic reaction. 8. Drug abuse. 9. Habituation. 10. Addiction. 11. Idiosyncrasy. 12. Initial dosage. 13. Maintenance dosage. 14. Tolerance.	
2.07 Describe the various methods for administering nonparenteral drugs and explain methods for safely giving these drugs.	H. Various nonparenteral preparations. 1. Solid preparations. 2. Liquid preparations. a. Oral. b. Drops. 3. Suppositories. 4. Topical preparations. 5. Patches. 6. Sprinkles. 7. Time release capsules/tablets. 8. Inhalers. II. PRN medications (non-prescription). A. How ordered. B. When to be given. C. Precautions. D. Types to be given. Vary in different types of facilities. 1. MR-Adult. a. Laxatives. b. Aspirin/acetemetaphine. 2. Child caring. 3. Supervised apartment living.	Handout Examples on display. Transparencies. Lecture-discussion.

MEDICATION MANAGER COURSE

Unit III Demonstrate safe methods of safely administering and recording nonparenteral medications

OBJECTIVE	CONTENT	METHOD
3.01 Explain how physician determines dosage and times for drugs administration.	I. Administration of nonparenteral medications. A. Factors influencing dosage and times of administration. 1. Local action. 2. Systemic action. a. Rate of absorption. b. Rate of elimination. 3. Resident condition. a. Age. b. Sex. c. Weight. d. Disease	Trainex filmstrip. Lecture-discussion.
3.02 Examine various nonparenteral drug preparations and explain how you would administer each.	B. Properties of nonparenteral medications. 1. Tablets. a. Scored. b. Enteric coated. 2. Capsules. a. Time release. 3. Sustained release medications. 4. Liquid preparations. a. Syrups. b. Elixirs. c. Emulsions. 5. Suppositories. 6. Sprays/inhalers. 7. Drops. 8. Sublinguals. 9. Medications applied to skin. a. Patches. b. Sprinkles. c. Ointments. 1) General use. 2) Eye. 3) Ear.	Display of various preparations. Lecture-discussion.

Unit III Demonstrate safe methods of safely administering and recording nonparenteral medications
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OBJECTIVE	CONTENT	METHOD
3.03 List the six rights of drug administration and explain how these six rights assist in safely administering drugs.	C. Rules and procedures for preparing non-parenteral medication. 1. Six rights. 2. If policy, check resident's chart for medication accuracy. 3. Check drug information for precautions. 4. Rules in licensing materials.	Handout--discussion. Administration checklists. Demonstration.
3.04 Describe the procedure for safely giving drugs to residents.	D. Rules and procedures for administering 1. Administer on time. 2. Identification of resident. 3. Communication with resident. 4. Methods to assist resident to swallow medications. 5. Precautions to be taken prior to administering specific drugs. a. Pulse prior to cardiotonics. b. Common side effects to be noted. 6. Which preparations to follow with water, juice, etc. 7. Methods of dealing with problems that may occur when administering medications.	Demonstration. Lecture-discussion. Demonstration-return demonstration Role playing. Role playing. Discussion.
3.05 Identify methods and information necessary in charting drugs that have been given.	E. Rules and procedures for recording drugs. 1. How to dispose of drugs not administered. 2. Places for recording medications. a. Where, what, when to chart. b. Controlled substances charting. 3. How to chart medications not given. 4. What to report to person in charge regarding observations made while administering medications. 5. How to report, chart and handle an error in medications administration.	Lecture. Demonstration. Medication sheet from facility. Overlays from regs for health care facilities relating to this.

Unit III Demonstrate safe methods of safely administering and recording nonparenteral medications.
Page 3

OBJECTIVE	CONTENT	METHOD
3.06 Discuss the role and responsibility of Medication Manager in administering PRN medications.	F. P.R.N. Medications. 1. Definition. 2. Who can administer what (policies). a. Child caring facilities. b. MR facilities. c. Supervised apartment living. 3. When to given PRN's. 4. Observations to be made. 5. Reporting/recording effects.	Lecture-discussion.

Unit IV Discuss necessary information medication manager must know about medications to be administered and demonstrate ability to correctly interpret medication information cards.

OBJECTIVE	CONTENT	METHOD
4.01 Explain what a person must know about specific drugs to safely administer the drug. 4.02 List and describe some general drug families explaining unique properties of each.	I. Selected families of drugs. A. Information needed to safely administer drugs. 1. Families. 2. Actions 3. Routes of administration. 4. Usual dosages. 5. Side effects. 6. Contraindications. 7. Nursing precautions. B. Medication information cards. 1. Alternatives to PDR. a. U.S. Advice to Patients. b. Consumer Drug Digest. c. Nursing Drug Handbook. 2. How to read information on cards. 3. How to use ressource. C. Drugs used in facility.	Handouts. Examples. Exercises. List and describe each with usages, cautions, and side effects.

UNIT I

Laws and Controlling Agencies

OVERVIEW:

This unit of study will examine the role of the law and the controlling agents as they relate to the safe administration of nonparenteral (noninjectable) medications.

OBJECTIVES:

1. Discuss the federal and state legislation that relates to drug administration.
2. Differentiate prescription from nonprescription drugs.
3. Describe the sections of the Controlled Substance Act that affect medication administration.

INTRODUCTION:

The responsibilities for the written laws that govern the administration of drugs are shared by both the federal and state governments. These laws provide restrictions that control the manufacture, sale, dispensing and administration of drugs. The rules and regulations have as their aim the protection of the resident, as well as the health workers who works with that resident. The laws provide for standards of care involved in medication administration and determining requirements for the credentialing of the various levels of health workers.

Each health worker must be prepared to assume responsibility and be accountable for all his/her actions when administering medications. Each worker must be aware of the threat of medical-legal problems that could arise. To safely carry out medication orders, all personnel assigned to these duties must know the legal requirements under which their health specialty functions. The legal requirements for this course will be the rules and regulations of the Department of Inspections and Appeals, Department of Human Services, and Iowa Board of Pharmacy; the Food, Drug and Cosmetic Act; and the Controlled Substance Act. Laws that control the administration of drugs are subject to change. The information provided was current at publication. Each health care facility will be informed as laws are changed and should keep employees informed as to these changes that affect them.

The Medication Manager

The medication manager is the person assigned to administer or supervise the resident taking of nonparenteral medications. In addition to preparing the correct medication and amount, make sure the resident takes the medication at the right time; the medication manager must also be aware of desired effects from medication, some of the more common side effects and be prepared to describe these effects or drug reactions to the appropriate supervisors.

Medications are used frequently as methods to treat diseases, prevent diseases or relieve uncomfortable symptoms. They have proved so successful in our culture, they are taken for granted and their associated dangers are ignored. Frequently they are even "abused."

You will need certain knowledges, skills and attitudes to safely assume the responsibility of administering any medications. These include an awareness of legal controls related to drugs, some general information about why drugs are given, procedures for safely preparing, giving and recording drug administration, recognizing symptoms of side effects and knowing what to do when you suspect a resident is having a side effect, as well as knowing when to give a PRN (whenever necessary) drug, how to prevent problems of drug interactions by identifying conditions when drugs should be given and finally determining actions to solve individual children's problems in taking medications.

This short course on medication administration will provide you with the basic skills and knowledges and help you select resource materials to solve/analyze individual resident problems associated with medications.

The Responsibilities of the Medication Manager

A. Give medicines only with prescription or order from the physician.
B. Know
   1) the medication's intended use,
   2) the purpose for which it is being given,
   3) any unfavorable reactions or side effects which might occur, and
   4) any warnings or directions of a specific nature concerning the medication.
C. Know the condition of the resident (e.g., allergies to certain medications, ability to swallow, etc.).
D. See that the:
   1) Right dose is measured.
   2) Right medicine is poured.
   3) Right resident is given the medicine.
   4) Medicine is given at the right time.
   5) Medicine is administered by the right channel or method.
   6) Medication is recorded promptly and accurately.
E. Give ONLY medicines you prepared.
F. Avoid distractions when preparing medications. (Do not talk with anyone while performing this skill.)
G. Read each medicine label carefully. If the label is not clear, check with appropriate personnel (pharmacists).
H. Read the label on the medication container carefully at least three times, as follows:
   1) when the container is taken from the resident's supply,
   2) when the medication is removed from the container, and
   3) when the container is returned to the resident's supply.
I. Take medicine only from a marked or clean container. Have the pharmacist change the label if it is not clear.
J. Keep all containers tightly closed to prevent any changes from occurring to the medication. If any change in color, consistency, or if there is an odor to medication, report it to the supervisor or the pharmacist for replacement.

K. Do not leave medication with resident to take later. Do not let resident administer medication to another resident.
L. Know and use facility policies for identifying correct resident.
M. Give the medication at the time it is ordered and remain with the resident until the medicine is taken.
N. Provide privacy for the resident during medication administration when it is indicated (i.e., rectal medications).
O. Follow institution's policy for disposing of drug when medication has been prepared but not taken because resident refuses, cannot be found, or is too sick to take the medication.
P. Give the resident any necessary instructions to insure the correct and safe administration of a drug.
Q. Report any error immediately.
R. Follow facility policies in the administration of PRN medications.
S. Observe the resident for therapeutic or side effects from medications and report as necessary.

The medication manager <u>does not</u>

A. Prepare or administer injectable (parenteral) medication.
B. Take oral or phone medication orders.
C. Transcribe orders.
D. Calculate dosage.
E. Dispose of drugs without supervisor or pharmacist input.

Federal Legislation

Prior to the turn of the century, there was little control of drug administration by the federal government. Although there were some medication standards as early as 1777 when the Army gave drugs to soldiers, these standards were difficult to enforce.

An early pioneer in the area of safe reliable drugs was Dr. E.R. Squibb. In 1887 Dr. Squibb founded a drug company for the purpose of providing the physician with safe drugs that could be considered reliable. Dr. Squibb also wrote what is thought to be the first food and drug act for New York, the first state to have a pure food and drug act.

The first federal legislation that was enacted to deal with the drug standards was The Food and Drug Act of 1906. The purpose of the Act of 1906 was to prevent the manufacture and sale of adulterated, misbranded, poisonous, or harmful foods or drugs. The legislation did accomplish the following:

A. Defined eleven narcotics and required labeling of drugs that contained narcotics.
B. Prohibited the false claims of cure-alls.
C. Provided for penalties if food or drugs were adulterated.
D. Gave official status to United States Pharmacopia (USP) and National Formulary (NF) as drug standards.
E. Gave the U.S. government authority to enforce official drug standards and to confiscate adulterated drugs or foods.

In 1937, a drug company produced a drug marketed as "elixir of sulfanilamide." One hundred deaths resulted from consuming this drug. Tests found that the solvent had not been tested and was toxic. The only charge that could be legally brought against the company was one of mislabeling. The drug had been

marketed as an elixir and was not a true elixir. This incident pointed to the need for more rigid and enforceable legislation. As a result of this tragedy, the Pure Food, Drug and Cosmetic Act of 1938 was passed.

The Pure Food, Drug and Cosmetic Act of 1938 had as its purpose the rigid control of the manufacture, sale and distribution of all nonnarcotic drugs. The law also had the power to require testing before any drug was marketed.

The Food and Drug Administration was established as a part of the Department of Health, Education and Welfare. The Federal Drug Administration Agency was given the responsibility to enforce the law.

Important contents of the law:

A. Habit forming drugs must be listed quantitatively on the label and must carry a warning that they are habit forming.
B. Certain drugs can only be obtained by prescription.
C. Testing was required to determine drug safety.
D. Classification of nonprescription drugs.
E. Labeling requirements:
    1. No false or misleading statements.
    2. Language easily understood.
    3. Dosage and frequency clearly stated--insuring safe consumption.
    4. Name and business address of manufacture.
    5. Accurate statement of contents.
    6. Special warnings, i.e., directions or contraindications for children or disease conditions that would be worsened if drug was taken.
    7. When unsafe for self medication, must state "Federal Law prohibits dispensing without a prescription."

In an attempt to make products safer for the consumer, this law has been amended several times. The law is administered by the Department of Health and enforced by the Federal Drug Administration Agency.

<u>The Legal Classification of Drugs</u>

A. Nonprescription or Over-The-Counter Drugs - Drugs which may be obtained without a prescription. They may be bought directly from the store. These drugs must be labeled correctly with recommended dosages, side effects and conditions under which they should not be taken. A good example of an over-the-counter drug is aspirin.
B. Prescription - Drugs that require a medical practitioner prescription. The prescription includes patient's name, date, name of drug, dosage, times to be taken, and amount to be taken. The label must include all other necessary information. An example of a prescription drug would be penicillin.
C. Controlled Substances - Drugs which are classified and are regulated by the Drug Enforcement Administration. They are classified by schedules according to potential for abuse (habituation, addiction). Schedule II are considered <u>most</u> likely to be abused and are not refillable. Schedule V are the <u>least</u> likely to be abused, the purchaser's signature is needed at pharmacy for purchase. Most, except for some Schedule V, need a physician's prescription.

Controlled Substance Act

The original legislation responsible for the control of narcotics was the Harrison Narcotic Act of 1914. This law regulated the importation, manufacture, sale, dispensing and prescribing of opium, cocaine and such narcotic derivatives.

The Marijuana Act of 1937 regulated the growth of hemp and the manufacture of hemp products. The late 1960's brought widespread drug abuse and forced Congress to reconsider the legislation that controlled narcotic and other drugs likely to be abused. Congress passed the Comprehensive Drug Abuse Prevention and Control Act in the fall of 1970. This law, known as the Controlled Substance Act, repealed all other legislation that dealt with narcotics or abused substances.

The controlled substance laws were designed to improve the regulation, manufacture, distribution, and dispensing of drugs that are classified as either narcotics or likely to be misused.

The Congress provided for an agency to enforce the new laws and that agency is known as the Drug Enforcement Administration (DEA). The DEA is a part of the Department of Justice and its director reports to the Attorney General of the United States.

The first step in implementing this legislation was to determine which drugs were to be controlled. Since narcotics and drugs considered to be addictive had the most potential for damage, they became first drugs controlled. These drug families included narcotics, barbiturates, amphetamines, sedatives and hypnotics.

Once the dangerous drugs were determined, the next step was to classify the drugs into "schedules" according to the degree of abuse potential or danger. The following is a list of the five schedules and a few examples of drugs that would be found in each schedule.

A. Schedule I - Experimental drugs with a high potential for abuse and are not currently accepted as medical treatment in the United States. Examples are LSD, Marijuana, Heroin.
B. Schedule II - Drugs with a high potential for abuse and can cause both physical and psychological dependence. These can be used for treatment in the U.S. Examples are Demerol, Morphine, Codeine, Percodan, Amphetamines.
C. Schedule III - Drugs with less potential for abuse than I and II. These drugs produce moderate physical dependence and high psychological dependence. Examples are ASA with codeine, Tylenol with codeine, Doriden, Fiorinal, Paregoric.
D. Schedule IV - Drugs with a lower potential for abuse and limited psychological and physical dependence. Examples are Darvon, Chloral Hydrate, Equanil, Librium, Valium.
E. Schedule V - Drugs with very low potential for abuse. Examples are Elixir of Terpin Hydrate with Codeine, Lomotil, Robitussin AC.

It would be impossible to include a complete list of controlled drugs. Each facility should have a current list of the scheduled drugs that it uses; this list should be posted. Drugs will be added to the lists and moved within the

schedules as necessary. The DEA is constantly checking drugs and reporting to the Attorney General. The Attorney General has the authority to reschedule drugs as is needed and frequently adds drugs or reschedules drugs.

The placement of a drug in a schedule is important. It will determine methods for handling the drug, such as the amount of control, record keeping, ordering and in part, dispensing of the drug.

The Controlled Substance Act also provides:

A. Anyone dealing with manufacture, prescribing and dispensing of a drug must register with DEA yearly.
B. Special provisions for prescriptions:
    1. Must contain physician's name, address, DEA number and signature.
    2. Patient's full name and date.
    3. Schedule II
        a. Order typed or written in ink.
        b. Prescriptions are not refillable. Doctor must reorder.
        c. Orders are only good for 72 hours except under special conditions.
        d. Each dose must be signed out when drug is prepared/ administered.
        e. Must be counted by two qualified persons every eight hours.
        f. Must be stored under double lock.
    4. Schedule III or IV
        a. Order must be written by physician.
        b. May be refilled three to five times.
    5. Schedule V
        a. May be purchased without prescription if city or state laws do not prohibit.
        b. Must be dispensed by pharmacist.
        c. The buyer must be eighteen years of age.
        d. The buyer must have identification.
        e. Pharmacist must keep accurate record book.
C. The dispensing agency (pharmacy) must
    1. Register yearly with DEA.
    2. Must keep accurate records.
        a. Schedule II stock supply counted every eight hours.
        b. Record must include resident receiving drug, date, time, doctor's name, and name and title of person administering drug.
D. Labels of drugs in Schedules II, III and IV must say "Federal Law Prohibits Transfer to Any Person Other than Prescribed."

Possession of controlled substance is a crime against both federal and state laws. Medication personnel can only have controlled substances on their person under the following circumstances:

A. As a patient - if they are in the original bottle and prescription has your name on it.
B. If you are in the process of administering the drug to a resident.

Violation can lead to a fine or imprisonment or both.

State Laws

The Iowa Board of Pharmacy Examiners of the State of Iowa is responsible for development of rules, regulations on dispensing and handling of drugs and controlled substances. Their rule (657) requires persons administering controlled substances to take this course.

The Board of Pharmacy Examiners also determines how scheduled drugs must be destroyed when no longer needed. The rule requires:

A. Stock supply of Schedule II - The pharmacist and either the administrator or director must destroy these drugs. The pharmacist must provide documentation that becomes part of the resident's permanent file. The documentation must include:
   1. Name of drug.
   2. Drug preparation form and strength.
   3. Amount.
   4. Signature of pharmacist.
   5. Signature of administrator/director who witnessed destruction.

B. Unit Dose Schedule II - Return to pharmacist who will provide written documentation of the return. The Board of Pharmacy Examiners shall be notified and shall provide for destruction.

C. Schedule III and IV.
   1. Unit dose preparation are sent to pharmacy.
   2. Stock supply - destroyed in facility with a witness present.

The Department of Human Services and Department of Inspections and Appeals have rules to control use, storage, care, and administration of drugs. The rules for each type of facility follow. You must be responsible for knowing the rules in facility where you work.

(1) Consumer identifying information.

(2) Name, address, and telephone number of the next of kin or guardian or legally designated other.

(3) Name, address, and telephone number of the person to be notified in case of emergency.

(4) Name, address, and telephone number of physician and hospital of choice.

(5) Source(s) of income.

(6) Legal status.

(7) Results of diagnoses and evaluations.

(8) Individual program plan, progress reports, and related entries.

(9) Social history.

(10) Medical information to include drug and food allergies and current prescribed and nonprescribed medications being taken by the consumer.

(11) Other personal identifying information which would be helpful in the case of a search for a consumer or other emergency, (i.e., distinguishing physical or behavioral characteristics, patterns, habits, preferences, places frequented, etc.).

36.5(10) The provider shall have written policies and procedures to include periodic review and evaluation of services and service provision, including the annual development of the operating plan incorporating the results of the evaluation. The evaluation shall include, but is not limited to, an evaluation of the following:

a. Type and number of services provided.

b. Staffing patterns.

c. Measures of consumer outcome.

441—36.6(225C) Program and services.

36.6(1) Each provider of a community supervised apartment living arrangement program shall have a sufficient number of qualified staff available to carry out all aspects of the program. The number and qualifications of staff shall be consistent with the consumers' needs and reflected in the provider's operating plan and personnel policies and procedures.

36.6(2) Each provider of a community supervised apartment living arrangement program shall have written policies and procedures for preadmission and admission which shall be available to referral sources and the general public. The policies and procedures shall address each of the following:

a. The requirement that only persons eighteen (18) years of age or older or minors who have attained their majority by marriage shall be admitted.

b. The requirement that only persons shall be admitted who need the level and type of supervision and services which can be provided in a community supervised living arrangement program.

c. The prerequisite consumer skills for admission.

d. Other admission criteria (i.e., age, type, and degree of disability).

e. Nondiscriminatory admissions without regard to race, color, creed, national origin, sex, or religion.

f. A description of services.

g. Cost rates for services and service-related activities and arrangements available to the consumer for payment.

h. The requirement that each consumer shall have a current medical and dental examination, completed by or under the supervision of a physician or dentist, within twelve months prior to admission, which includes a re-examination date or schedule.

i. The requirement that each consumer shall have a current evaluation of skills and needs pursuant to subrule 36.6(3) and an individual program plan developed pursuant to subrule 36.6(6).

j. Waiting lists and selection priorities.

k. Referral of those not appropriate for admission.

l. Receipt of individual service plan from the referring agency when applicable.

m. The requirement that written policies and procedures governing the methods of hand-

ling prescriptions and over-the-counter medications will be developed by the provider before admitting any consumer who is unable to self-administer medications. The policies and procedures shall minimally include the following:

(1) The process for identifying consumers who are unable to self-administer medication.

(2) Provisions for the provider to meet all federal, state, and local laws or regulations relating to the procurement, storage, dispensing, administration, and disposal of medications.

(3) Provisions for prescribed medications to be administered only in accordance with the instructions of the attending physician, dentist, podiatrist, or optometrist.

(4) Provision for the documentation of the administration of medication, to minimally include the type and amount of medication, the time and date, the route the medication was administered, and the signature of the person administering the medication.

(5) The process for administering PRN medication.

(6) The process for reporting errors in the administration of medication including early or late medication times.

(7) The process for identifying and the immediate reporting of suspected adverse reactions to medications.

(8) Provisions for the training of all staff who deal with or administer medications in the areas identified above.

36.6(3) Diagnostic and evaluation services shall be provided to each consumer. An annual evaluation or re-evaluation of each consumer shall be completed no later than twelve (12) months from the date of the last available evaluation. The evaluation or re-evaluation shall be completed by an interdisciplinary team composed of representatives from professions, disciplines, or service areas relevant to the particular evaluation. The evaluation or re-evaluation shall be of sufficient detail to identify the consumer's current level of functioning and need for services in the following areas: Self-care training, treatment, vocational, academic, and community living skills to include the consumer's need for services to develop the skills necessary to obtain and maintain living arrangements and to learn the rights and responsibilities of community living.

a. If an evaluation is available from the referral source, the evaluation results shall be secured by the provider prior to the admission of the consumer. The evaluation shall meet the requirements of subrule 36.6(3).

b. If an evaluation is not available from the referral source, or if the available evaluation does not contain all the required information, the provider shall ensure the consumer is evaluated to the extent necessary to determine if the consumer meets the criteria for admission. For those admitted, the remainder of the evaluation shall be completed prior to the development of an individual program plan pursuant to subrule 36.6(6).

c. Additional diagnostic and evaluation services determined by the interdisciplinary team to be needed shall be delivered or arranged by the provider.

36.6(4) Service coordination services shall be provided to each consumer.

a. Service coordination services shall be provided by a service coordinator designated for each consumer. The provider shall specify in written policies and procedures the qualifications required of the service coordinator. Minimal qualifications shall be one of the following:

(1) A bachelor's degree from an accredited college or university in the social or behavioral sciences and one year of post-degree experience in the delivery, planning, coordination or administration of human services.

(2) A high school diploma (or its equivalent) and five (5) years of post-degree experience in the delivery, planning, coordination or administration of human services.

(3) A combination of post-high school experience in the delivery, planning, coordination or administration of human services and post-high school education in the social or behavioral sciences which totals five (5) years. One of the five (5) years must be experience.

b. The service coordinator shall be responsible for the coordination of services to the consumer to include coordination of the following:

(1) Social history development pursuant to subrule 36.6(5).

(2) Individual program planning pursuant to subrule 36.6(6) and to ensure availability, implementation, and coordination of services delivered by other providers.

441—114.12(237) Drug utilization and control. The agency shall have written policies and procedures governing the methods of handling prescription drugs and over the counter drugs within the facility. No prescription or narcotic drugs are to be allowed in the facility without the authorization of a licensed physician.

114.12(1) *Approved drugs.* Only drugs which have been approved by the federal Food and Drug Administration for use in the United States may be used. No experimental drugs may be used.

114.12(2) *Prescribed by physician.* Drugs shall be prescribed by a physician licensed to practice in the state of Iowa or the state in which the physician is currently practicing and may be prescribed only for use in accordance with dosage ranges and indications approved by the federal Food and Drug Administration.

114.12(3) *Dispensed from a licensed pharmacy.* Drugs provided to residents shall be dispensed only from a licensed pharmacy in the state of Iowa in accordance with the pharmacy laws in the Code of Iowa, or from a licensed pharmacy in another state according to the laws of that state, or by a licensed physician.

114.12(4) *Locked cabinet.* All drugs shall be maintained in a locked cabinet. Controlled substances shall be maintained in a locked box within the locked cabinet. The cabinet key shall be in the possession of a staff person. A bathroom shall not be used for drug storage. A documented exception can be made by a physician for self-administered drugs as discussed in 114.12(17).

114.12(5) *Medications requiring refrigeration.* Medications requiring refrigeration shall be kept in a locked box in the refrigerator and separated from food and other items.

114.12(6) *Poisonous or caustic drugs.* All potent poisonous or caustic drugs shall be plainly labeled, stored separately from other drugs in a specific well-illuminated cabinet, closet, or storeroom, and made accessible only to authorized persons.

114.12(7) *Prescribed medications.* All prescribed medications shall be clearly labeled indicating the resident's full name, physician's name, prescription number, name and strength of the drug, dosage, directions for use, date of issuing the drug. Medications shall be packaged and labeled according to state and federal guidelines.

114.12(8) *Medication containers.* Medication containers having soiled, damaged, illegible or makeshift labels shall be returned to the issuing pharmacist.

114.12(9) *Medication for discharged residents.* When a resident is discharged or leaves the facility, medications currently being administered shall be sent, in the original container, with the resident or with a responsible agent, and with the approval of the physician.

114.12(10) *Unused prescription drugs.* Unused controlled prescription drugs prescribed for residents shall be returned to the issuing pharmacist or physician for credit or destruction according to state law. Other unused prescription drugs shall be destroyed by facility staff in the presence of a witness and this destruction shall be documented.

114.12(11) *Refills.* Prescriptions shall be refilled only with the permission of the attending physician.

114.12(12) *Use of medications.* No prescription medications prescribed for one resident may be administered to or allowed in the possession of another resident.

114.12(13) *Order of physician.* No prescription medication may be administered to a resident without the order of a licensed physician.

114.12(14) *Patient reaction.* Any unusual patient reaction to a drug shall be reported to the attending physician immediately.

114.12(15) *Dilution or reconstitution of drugs.* Dilution or reconstitution of drugs and their labeling shall be done only by a licensed pharmacist.

114.12(16) *Administration of drugs.* Medications shall be administered only in accordance with the instructions of the attending physician. Controlled substances shall be administered only by qualified personnel. The type and amount of the medication, the time and date, and the staff member administering the medication shall be documented in the child's record. (See IAC 620—8.16(204).)

114.12(17) *Self-administration of drugs.* There shall be written policy and procedures rela-

tive to self-administration of prescription medications by residents and only when:

a. Medications are prescribed by a physician.

b. The physician agrees that the patient can self-administer the drug.

c. What is taken and when is documented in the record of the child.

This rule is intended to implement Iowa Code section 237.3.

441—114.13(237) Children's rights.

114.13(1) *Policies in writing.* All policies and procedures covered in this rule shall be in writing and provided to the child and parents or guardian upon the child's admission to the facility. The rationale and circumstances of any deviation from these policies shall be discussed with the child's parents or guardian and the referring worker, documented, and placed in the child's case record.

114.13(2) *Confidentiality.* Information regarding children and their families shall be kept confidential and released only with proper written authority.

114.13(3) *Communication.*

a. Visitation shall be allowed with members of the child's immediate family unless otherwise regulated by the court.

b. Visits shall be allowed with other significant persons.

c. Consideration shall be given to privacy for family visits.

d. The child shall be permitted to communicate with legal counsel and the referring worker.

e. The child shall be allowed to conduct private telephone conversations with family members. In-coming calls may be screened by staff to verify the identity of the caller before approval is given.

f. The child shall be allowed to send and receive mail. The facility may require the child to open in-coming mail in the presence of a staff member when it is suspected to contain contraband articles, or when there is money that should be receipted and deposited.

g. When limitations on visitation, calls or other communications are indicated, they shall be determined with the participation or knowledge of the child, family or guardian, and the referring worker. All restrictions shall have specific bases which shall be made explicit to the child and family and documented in the child's case record.

114.13(4) *Privacy.* Reasonable provisions shall be made for the privacy of residents.

This rule is intended to implement Iowa Code section 237.2.

441—114.14(237) Personal possessions.

114.14(1) *Belongings.* A facility shall allow a child in care to bring personal belongings and to acquire belongings in accordance with the child's service plan. However, the facility shall, as necessary, limit or supervise the use of these items while the child is in care.

114.14(2) *Clothing.* A facility shall ensure that each child in care has adequate, clean, well-fitting, attractive, and seasonable clothing as required for health, comfort, and physical well-being. The clothes should be appropriate to age, sex and individual needs.

This rule is intended to implement Iowa Code section 237.2.

441—114.15(237) Religion—culture.

114.15(1) *Facility orientation.* A facility shall have a written description of its religious orientation, particular religious practices that are observed, and any religious restrictions. This description shall be provided to the child, the parent(s) or guardian, and the placing agency at the time of admission.

114.15(2) *Child participation.* When a facility accepts a child, the child shall have the opportunity to participate in religious activities and services in accordance with the child's own faith or that of the child's parent(s) or guardian. The facility shall, when necessary and reasonable, arrange transportation for religious activities. Wherever feasible, the child shall be permitted to attend religious activities and services in the community.

This rule is intended to implement Iowa Code section 237.2.

63.17(5) *Personnel record.*

a. An employment record shall be kept for each employee consisting of the following information: Name and address of employee, social security number of employee, date of birth of employee, date of employment, experience and education, references, position in the home, date and reason for discharge or resignation. (III)

b. The personnel records shall be made available for review upon request by the department. (III)

481—63.18(135C) Drugs.

63.18(1) *Drug storage.*

a. Residents who have been certified in writing by the physician as capable of taking their own medications, may retain these medications in their bedroom but locked storage must be provided. (III)

b. Drug storage for residents who are unable to take their own medications and require supervision shall meet the following requirements:

(1) A cabinet with a lock shall be provided which can be used for storage of drugs, solutions, and prescriptions; (III)

(2) A bathroom shall not be used for drug storage; (III)

(3) The drug storage cabinet shall be kept locked; (III)

(4) Schedule II drugs, as defined by chapter 204 of the Code, shall be kept in a locked box within the locked medication cabinet; (II)

(5) The medicine cabinet key shall be in the possession of the employee charged with the responsibility of administering medications; (II, III)

(6) Medications requiring refrigeration shall be kept in a refrigerator and separated from food and other items; (III)

(7) Drugs for external use shall be stored separately from drugs for internal use; (III)

(8) All potent, poisonous, or caustic materials shall be stored separately from drugs. They shall be plainly labeled and stored in a specific, well-illuminated cabinet, closet, or storeroom and made accessible only to authorized persons; (I, II)

(9) The drug cabinet shall have a work counter, both the counter and cabinet shall be well-lighted; (III)

(10) Running water shall be available in the room in which the medicine cabinet is located or in an adjacent room; (III)

(11) Inspection of drug storage condition shall be made by the administrator and a registered pharmacist not less than once every three months. The inspection shall be verified by a report signed by the administrator and the pharmacist and filed with the administrator. The report shall include, but not be limited to, certifying absence of the following: Expired drugs, deteriorated drugs, improper labeling, drugs for which there is no current physician's order, and drugs improperly stored. (III)

c. Bulk supplies of prescription drugs shall not be kept in a residential care facility for the mentally retarded unless a licensed pharmacy is established in the facility under the direct supervision and control of a pharmacist. (III)

63.18(2) *Drug safeguards.*

a. All prescribed medications shall be clearly labeled indicating the resident's full name, physician's name, prescription number, name and strength of drug, dosage, directions for use, date of issue, and name and address and telephone number of pharmacy or physician issuing the drug. Where unit dose is used, prescribed medications shall, as a minimum, indicate the resident's full name, physician's name, name and strength of drug, and directions for use. Standard containers shall be utilized for dispensing drugs. Paper envelopes shall not be considered standard containers. (III)

b. Medication containers having soiled, damaged, illegible or makeshift labels shall be returned to the issuing pharmacist, pharmacy, or physician for relabeling or disposal. (III)

c. The medications of each resident shall be kept or stored in the originally received containers. (II, III)

d. When a resident is discharged or leaves the facility, the unused prescription shall be sent with the resident or with a legal representative only upon the written order of a physician. (III)

e. Unused prescription drugs prescribed for residents who have died shall be destroyed by the person in charge with a witness and notation made on the resident's record, or, if a unit dose system is used, such drugs shall be returned to the supplying pharmacist. (III)

f. Prescriptions shall be refilled only with the permission of the attending physician. (II, III)

g. No medications prescribed for one resident may be administered to or allowed in the possession of another resident. (II)

h. Instructions shall be requested of the Iowa board of pharmacy examiners concerning disposal of unused Schedule II drugs prescribed for residents who have died or for whom the Schedule II drug was discontinued. (III)

i. There shall be a formal routine for the proper disposal of discontinued medications within a reasonable but specified time. These medications shall not be retained with the resident's current medications. Discontinued drugs shall be destroyed by the responsible person with a witness and notation made to that effect or returned to the pharmacist for destruction or resident credit. Drugs listed under the Schedule II drugs shall be disposed of in accordance with the provisions of the Iowa board of pharmacy examiners. (II, III)

j. All medication orders which do not specifically indicate the number of doses to be administered or the length of time the drug is to be administered shall be stopped automatically after a given time period. The automatic stop order may vary for different types of drugs. The personal physician of the resident, in conjunction with the pharmacist, shall institute these policies and provide procedures for review and endorsement. (II, III)

k. No resident shall be allowed to keep in his or her possession any medications unless the attending physician has certified in writing on the resident's medical record that the resident is mentally and physically capable of doing so. (II)

l. No medications or prescription drugs shall be administered to a resident without a written order signed by the attending physician. (II)

m. Each facility shall establish a policy cooperating with a licensed pharmacist to govern distributing prescribed medication to residents who are on leave from a facility. (III)

(1) Medication may be issued to residents who will be on leave from a facility for less than 24 hours. Notwithstanding the prohibition against paper envelopes in subrule 63.18(2)*"a,"* non-child-resistant containers may be used. Each container may hold only one medication. A label on each container shall indicate the date, the resident's name, the facility, the medication, its strength, dose, and time of administration.

(2) Medication for residents on leave from a facility longer than 24 hours shall be obtained in accordance with requirements established by the Iowa board of pharmacy examiners.

(3) Medication distributed as above may be issued only by facility personnel responsible for administering medication.

63.18(3) ***Drug administration.***

a. A properly trained person shall be charged with the responsibility of administering medications. This person shall have completed the state-approved course for training of individuals charged with the administration of nonparental medications which meets guidelines adopted by the department and other appropriate agencies. (II)

b. Unless the unit dose system is used, the person assigned the responsibility of medication administration must complete the procedure by personally preparing the dose, observing the actual act of swallowing the oral medication, and charting the medication. (II) In facilities where the unit dose system is used, the person assigned the responsibility must complete the procedure by observing the actual act of swallowing the medication and charting the medication. Medications shall be prepared on the same shift of the same day they are administered, (II) unless the unit dose system is used.

c. Injectable medications shall be administered by a qualified nurse or physician.

d. Residents certified by their physician as capable of injecting their own insulin may do so. Insulin may be administered pursuant to *"c"* above or as otherwise authorized by the resident's physician. Authorization by the physician shall:

(1) Be in writing,

(2) Be maintained in the resident's record,

(3) Be renewed quarterly,

(4) Include the name of the individual authorized to administer the insulin,

(5) Include documentation by the physician that the authorized person is qualified to administer insulin to that resident.

e. An individual inventory record shall be maintained for each Schedule II drug prescribed for each resident. (II)

Study Questions for Unit I

1. Briefly describe the responsibilities of the medication manager.

2. What is the "Controlled Substance Act?" What are the major requirements?

3. What is the "Pure Food, Drug, and Cosmetic Act?" What are the requirements?

4. What is the difference between non-prescription and prescription drugs?

5. What responsibility does the Iowa Board of Pharmacy Examiners have in maintaining resident safety?

6. What is the relationships of the Iowa Department of Human Services or Department of Inspections and Appeals for the handling and storage of drugs in residential facilities?

UNIT II

General Information About Nonparenteral Drugs

OVERVIEW:

This unit of instruction provides general information about handling and storing drugs. Emphasis is placed on necessary information to safely administer medications.

OBJECTIVES:

1. Examine the role of various health professionals in prescribing, preparing, and administering medications.
2. Describe methods for correctly storing drugs, including storage of controlled substances.
3. List reasons medications are given and list a medication given for each reason.
4. Describe common drug reactions or interactions and procedures for dealing with these reactions.
5. Describe common nonparenteral medication preparations.

INTRODUCTION:

As a medication manager you should know the role of various health professionals in medication therapy as well as some general actions and interactions of drugs.

Role of Health Personnel

The medical practitioner, prepared through college and medical or dental college, is the health professional who diagnoses and treats disease. He/she is responsible for diagnosing disease condition and deciding what medication the resident is to receive for treatment. Medication practitioners include physicians, podiatrists, dentist, osteopaths. The prescription will be filled by a local pharmacy. Information to be included on prescription will be discussed later.

The physician's assistant is a health professional trained to assist the physician in his/her role and responsibilities. As an agent of a physician, they may enter a prescription order, which will be signed later by physician.

Pharmacists are the health professionals who are licensed to dispense medication. This means they prepare and sell drugs and fill prescriptions and orders.

The licensed nurse is the health professional who assesses resident needs; plans, supervises and evaluates the resident care. If your facility has a nurse, he/she is the first person you should go to with questions and

problems. Nurses have knowledge and experience in preparing and passing medications. The nurse also is legally responsible for everything you are doing. He/She should help you to make decisions.

If your facility does not have a nurse, your immediate supervisor is responsible for obtaining necessary information or reporting unusual medication reactions. He/She should be contacted when you have concerns regarding the resident, the resident's medication or reaction to medications.

Storage of Medications

The Iowa Department of Inspections and Appeals and Department of Human Services have specific rules for storing drugs (see Unit I). Medications are stored in a medicine cupboard which should be kept clean and orderly at all times. Each resident receiving a medication will have a bottle or unit dosage with their name on it. The label should be clearly written with all information correct.

Some drugs may chemically deteriorate and this may change the action of the drug. All drugs should be watched closely for any change in color or appearance. If any changes are noted, the drug should not be used, but returned to the pharmacist for replacement.

Bottles should be stored upright and in such a manner so they will not be broken. If a liquid separates or needs to be shaken before administration, the pharmacist will label "Shake Well."

If a drug is sensitive to moisture or air, it should be kept in a dry atmosphere (not around steam) and in a tightly closed container. Medicines should not be stored in the sunlight. Some medicines are especially sensitive to light and will come from the pharmacy in a dark colored container. These drugs should not be stored in light nor put in another container.

All medication should be stored behind one locked door or drawer to prevent anyone from removing or taking medication not prescribed. Schedule II controlled substances must be stored behind two locked areas.

If a drug is to be refrigerated, be sure it is kept in the refrigerator but not frozen. The drug should be labeled "Store in Refrigerator." This label is the responsibility of the pharmacist. Liquid antibiotics are frequently refrigerated to prevent them from changing strengths. You may also have suppositories in the refrigerator to keep them from melting. All drugs should be separated from food in refrigerator. The refrigerator where drugs are stored should be kept locked or in a locked room.

Drugs for external use shall be stored separately from drugs for internal use and should be labeled by the pharmacist, "For External Use Only."

All potent, poisonous or caustic materials shall be plainly labeled and stored separately from drugs. The storage area must be an illuminated cabinet, closet or storeroom.

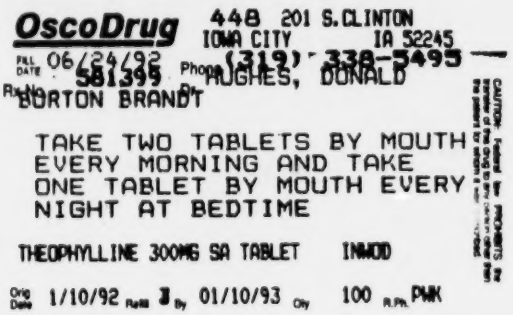
If a resident's drugs are discontinued before being completely used, they should be handled according to your facility's policy. Most medications can be sent back home with a responsible adult family member. A supervisor or pharmacist makes the decision if a noncontrolled medication must be destroyed. This can be done by flushing it down the toilet or hopper rather than using the garbage.

Prescription Labels

Every prescription medication must contain certain information on the medication label. This information is vital to proper identification and administration of the medication.

Medication labels should include:

- Name of the pharmacy
- Patient's name
- Prescribing doctor's name
- Date the prescription is filled
- Number of the prescription
- Name of the drug
- Dosage
- Instructions for taking: amount of drug to be taken, method of taking, and any special times that the drug should be taken (before meals, after meal, before bed, etc.).
- Initials of the pharmacist.
- The telephone number of the pharmacy should also be on the label. If you have any question about medications, take the label with you when you discuss it with the supervisor.


OscoDrug 448 201 S.CLINTON
IOWA CITY IA 52245
Fill Date 06/24/92 Phone (319) 338-5495
Rx No 581395 Dr HUGHES, DONALD
BURTON BRANDT

TAKE TWO TABLETS BY MOUTH EVERY MORNING AND TAKE ONE TABLET BY MOUTH EVERY NIGHT AT BEDTIME

THEOPHYLLINE 300MG SA TABLET INWOOD

Orig Date 1/10/92 Refill By 01/10/93 Qty 100 R.Ph. PMK

Methods of Taking Medications

There are five common methods of taking or using medications:

1. Ingestion: Taking it by mouth (tablets, capsules, or liquids).
2. Injection: Forcing a liquid or other substance into the body with a needle and syringe (insulin for diabetics, and other drugs).
3. Insertion: Placing or thrusting something into a body cavity (vaginal or rectal suppositories).
4. Application: Spreading, laying, or dropping a substance on the skin, hair, in the eyes or ears.
5. Inhalation: Inhaling a drug through nose or mouth.

The instructions on the medication label should give specific directions for correct procedure for using the medication.

Timing of Dosages and Special Orders

Every medication label must given instructions as to the timing of dosage. At the least, these instructions will indicate how often to take the medicine each day. The instructions might be, "Take two tablets four times day." This does not tell you exactly when each day to give the medication, just to give it four times during the day. Generally, it is assumed that the resident will be given the medicine at fairly evenly-spaced intervals over the course of the day, such as 8 a.m., 12 p.m., 4 p.m., and 8 p.m. Each facility will designate these hours. Please refer to your facility's policy book.

The timing of the dosage could also be more specific than "four times a day." The label might direct that the medication be taken in the morning, at bedtime, just before a meal, with the meal, or just after a meal. Some medications have to be taken on an empty stomach, and in such a case the label directions might specify that the medication be taken one, two, or three hours before or after a meal. There are always specific reasons for such orders. For example, certain medications can only be tolerated by the system when taken with food; others can only be absorbed by the system when taken on an empty stomach. And so on.

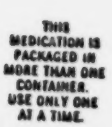
In some cases, the label might specify that the medication be taken at certain intervals "as needed." This might include certain analgesics (pain killers), nitroglycerine tablets for residents with heart conditions or bronchodilators for residents with breathing problems. The label will specify the dosage to be given if and when the condition exists. (Example: "Take two tablets as needed for chest pain.") Usually, the label will also specify the limit of daily dosage. (Example: "Not to exceed six tablets a day.") Check the facility policy for specifics.

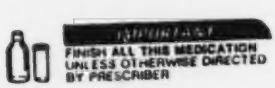
In any case, it is important to very carefully follow the label directions regarding the timing of the dosage. If there is any question about the timing, consult the doctor or pharmacist.

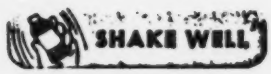
It is also important to be aware of and to follow any special precautions on the medication label. These precautions may relate to the method or circumstances of taking the drug, activities to avoid while using the medication, storage of the medication, and so on.

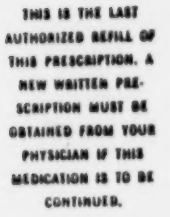
The special precaution might be typed on the label, or it might be on a small sticker attached to the label or just below it. Such stickers are often colored so that they will stand out.

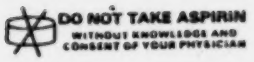
Here are some examples of special precautions that appear on medication containers.

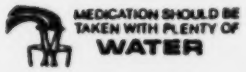







THIS IS THE LAST AUTHORIZED REFILL OF THIS PRESCRIPTION. A NEW WRITTEN PRESCRIPTION MUST BE OBTAINED FROM YOUR PHYSICIAN IF THIS MEDICATION IS TO BE CONTINUED.





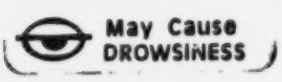
These are just a few examples. There could be many others. Remember that there are always sound reasons for such precautions. Follow carefully.

Warnings of Side Effects

Many medications can produce side effects. In some cases, these side effects can be a cause for great concern. Some medications can cause nausea, vomiting, dizziness, drowsiness, or confusion.

If a drug commonly causes side effects, there should be a warning to the effect on the label. Usually this will be in the form of a small sticker which is placed on or just below the label itself.

Here are some examples of warnings of side effects that appear on medication containers:



Again, the important thing to remember is that there are always sound reasons for side effect warnings. Thus, it is important to look for such a warning on a bottle of medication, and to follow that warning.

Prescription Information

A part of your job description may be to accompany a resident to see a physician. In such a situation you should consider the following:

1. The types of information which must accompany the resident.
2. Information that should be obtained from the physician and pharmacist.
3. What you need to do with the information received.

Information for the doctor: The following types of information should be provided to the physician.

1. Complete medical records if physician is seeing the resident for the first time.
2. Drug allergies, if any.
3. Current medications being taken by resident including non-prescription drugs.
4. Current dental and medical conditions even if not being treated by medications.

5. Observations in writing of changes that have occurred recently in either behavior or physical symptoms.

Information to get from the doctor.

1. Order or prescription in writing for each new drug.
2. A school prescription if resident must take medication during school hours.

There are several important questions you must have answered if you are to safely administer medications. The physician and pharmacist are the people who can answer them for you. Do NOT trust your memory--write down the answers for the following:

1. Describe effect of the drug.
2. How long before desired effects can be expected to occur?
3. Unwanted side effects that should be watched for.
4. Possible interactions with other medications.
5. Special administration or storage instructions.
6. Is the medication a controlled substance?

Reasons Drugs Are Given

Drugs may be given for different reasons and are often given for a combination of the following reasons:

1. Prevention of disease--certain drugs are used to prevent diseases. Most common are vaccinations or immunizations. Immunizations are currently required by law in the State of Iowa before entering school.
2. Relief of symptoms--a great many drugs are ordered to relieve symptoms of diseases. A drug may be ordered to relieve symptoms of pain, gastric upset, constipation, etc. These drugs only relieve the symptoms; the cause of the symptom may still be present. Example is aspirin which relieves headache, but does not affect what caused the headache.
3. Cure of a disease--drugs are also ordered that cure diseases; actually affect what causes the disease. An example would be the use of antibiotics to kill the bacteria that causes infections.
4. Replacement therapy--these are substances that are naturally supplied by the body or found in food. If for some reason these substances are not supplied in enough quantity, these substances are given in form of a medication. Insulin is a good example of a preparation given for replacement therapy. The healthy body produces enough insulin to metabolize sugar; however, if because of disease this is not occurring, insulin is given to replace that not being produced by the body.

Drug Reaction

Drugs are given to correct or alleviate a resident's symptoms or to cure a disease. Drugs produce their affects by interacting with body cells. Generally, a given drug will produce similar effects on each person to whom it is given. However, occasionally individuals will react differently to a drug than is expected. A common example is the affect the caffeine in coffee has on selected individuals. It makes some jittery, keeps them

awake at nights, while it seems to have no or little affect on others.

It is important you realize that when a person takes a drug, the result depends on how that drug effects their individual body cells. You should be observing residents who are on medications to see if they are getting the desired effect or if they are having any unusual or undesired effect from the drug. Since some of these undesirable effects can seriously endanger the resident's health, you need to be aware of the common "side effects" of the drug and report them immediately to your supervisor.

Age and chronic diseases have an influence on how drugs react. Children and older persons often need less of a drug for desired results. Many drugs may affect children differently than adults, e.g., sedatives will sometimes excite. Since older persons have slower metabolism rates, they may have accumulative effects from drugs. Never take an expected drug action for granted. Be alert for unusual reactions.

Some of the more common side effects are nausea and vomiting (N & V), drowsiness, unusual excitement, dizziness, staggering walk (ataxia), blurred vision, dry mouth and loss of appetite. These side effects may vary in degree or subside (decrease) as the resident's body adjusts to the medication. However, all reactions should be noted and reported. The doctor determines the need for discontinuing medications.

Occasionally, residents will have an allergic reaction to a medication. Allergic reactions can occur immediately after the first administration of the drug or may develop after a resident has been on a drug for a long period of time. Some of these allergic reactions only cause mild symptoms while others can cause severe symptoms which must be treated immediately.

The symptoms of mild allergic reaction are skin rashes, swelling or puffiness, sneezing, runny nose, red, itchy eyes, and fever. When these are noted, withhold the medication and report it to your supervisor who will contact the physician.

The symptoms of a severe allergic reaction (medically called anaphylactic shock) are difficulty breathing, extreme weakness, nausea and vomiting, a bluish tint to the skin, low blood pressure resulting in a cardiac arrest. Residents who have these symptoms must be treated immediately probably at the nearest emergency room.

The antibiotics (penicillin and like drugs) have caused severe allergic reactions in some people. Residents on antibiotics must be watched for allergic reactions and if a resident has had allergic reactions to a specific antibiotic in the past. the doctor must be aware of it and will not order that specific drug for the resident.

You should also be aware that some people have unusual responses to certain drugs (these are referred to as idiosyncrasy). These are unexplained or unexpected effects that are unusual for a drug. E.g., phenobarbital, which generally acts by quieting a person, has been known to cause agitation in some younger people. When a reaction like this occurs, you should notify your supervisor immediately.

Cumulation is another drug reaction that you should be aware of and report.

It occurs when the resident's body is not getting rid of the drug at the usual rate and the amount of the drug in body builds and acts as a poison. Each additional dose increases poisoning. This often occurs in chronically ill or elderly who have a slower metabolism. If you suspect cumulation is occurring, report it to your supervisor.

Special Precautions

Special precautions refer to special actions that should be taken or observed when giving certain drugs. Examples include: taking blood pressure before giving a drug that lowers blood pressure, giving medications on empty stomach, giving medications at meals to prevent nausea and vomiting or increasing fluid intake.

Specific drugs also require the resident to do or not to do something such as do not drive a car while taking this drug, not drinking alcoholic beverages while taking this drug, do not take if you have high blood pressure, etc. The pharmacist often attaches a label to the drug bottle describing this special precaution. You should always be aware of special precautions associated with specific drugs and be sure they are followed by the resident.

Drug Interaction

A drug interaction is when two or more drugs chemically react and the combined action alters the effects each would have if taken alone. The physician will occasionally order these together for a therapeutic effect. More frequently, however, the resident may take over-the-counter or illicit drugs of which the physician in unaware and then the drug interaction can be serious.

When two or more drugs are given together and potentiate each other, it means that combined they cause a greater affect than if given alone. Alcohol is a depressant and when taken with other depressant drugs can be dangerous. When you suspect the resident is taking illicit drugs, you must be aware potentiation can occur and report it immediately.

Occasionally, when two or more drugs are given together, they decrease the affect they would have had if taken alone. This slows the action of therapeutic medications and residents do not respond to the drug treatment as expected. It is also important to notify the physician when this happens.

Poison Control

A resident may get an overdose (too much) of a medication. This overdose is toxic (poisonous) and may cause serious problems for the resident. Overdoses occur as a mistake, poor judgment, or even a suicide attempt.

The symptoms of (toxicity) poisoning vary depending on the drug. These symptoms may range from severe nausea and vomiting to unconsciousness. It is essential to provide immediate treatment if poisoning is suspected, by

notifying supervisor or contacting Poison Center for assistance. It is important you know and report what drug or drugs were taken, when they were taken, and if possible how much was taken.

The University Hospital is the State Poison Control Center. The toll free number is 1-800-272-6477. You may call anytime for information or guidance.

Properties and Preparations on Nonparenteral Medications (Lab Demonstration)

A. Solid Preparations
   1. Tablets - solid dosage form containing a drug.
      a. Scored tablets - this means they have marks for breaking and a part of the tablet can be given. Only scored tablets may be broken.
      b. Enteric coated tablets - this is a special coating that prevents absorption until the tablet reaches the small intestine. These drugs should never be crushed before administration.
   2. Capsule - solid drugs in soluble container, especially useful with bitter tasting drug.
   3. Spansules - solid drugs which are coated so they are dissolved and absorbed at different times. The drug is gradually released at special times. This provides longer drug action.
   4. Pills - solid preparations in which the drug is compressed into a ball. Very few drug preparations are in pill form, the tablet preparation is preferred.
   5. Powders - drugs ground into powders.
   6. Suppository - solid drug with a firm base. They are molded into shapes for easy insertion into body cavities. They melt at body temperature so they can be absorbed.
   7. Lozenges - solid drugs made into flat disks; usually combined with sugar and soothing medication (cough drops).
   8. Ointments - solid drugs mixed in a fatty substance. Generally spread on the skin for a local effect. May be used as a patch.

B. Liquid preparations - in the liquid preparation, solid drugs are usually mixed with water or alcohol.
   1. Syrup - drug mixed in sugar/water solution. This makes the drug taste better.
   2. Elixir - drug mixed in alcohol and sugar to make them taste good.
   3. Spirits - drugs dissolved in alcohol.
   4. Suspensions - fluid substances that stay mixed for a while but after a while separate. Must be shaken well before giving.
   5. Lotions - watery preparations that contain suspended matter. Commonly used for soothing affect.
   6. Solutions - liquid preparations containing dissolved substances. Used in eyes, ears.
   7. Tincture - a drug mixed in an alcoholic solution. Tincture preparations may be <u>either</u> for internal or external use, and must be used as indicated. The solutions are <u>not</u> interchangeable.
   8. Mists or sprays - inhalers used for respiratory problems. May be given regularly or PRN.

Parenteral Medications

A. Medications given by injection.
B. Can be administered only by licensed nurse or physician.
C. Nursing care precautions: noting the site of injection for edema, soreness, redness and report it when appropriate.

Study Questions for Unit II

1. Briefly describe what each of the following health professional's role is in preparing, dispensing and administering drugs.

   Physician

   Pharmacist

   Nurse

   Facility supervisor

   Medication Manager

2. The following are examples of physician's orders and their corresponding pharmacy labels. Compare each pharmacy label with its corresponding physician's order and circle any discrepancies that you find. Also, please briefly state what you would do if you found such a discrepancy. Are there any special warning labels that should be on the bottles? What are they?

Pharmacy Label	Prescription
1026 Rams Lane 932-4868 Jones Pharmacy	1942 Arlington 203-7983 T. Jacobs, M.D.
Billy Smith 12/17/92	Billy Smith 102 Lincoln
Hypnette 30 mg #60	Phenobarbital 30 mgm
Take one tablet for times a day: one before each meal and one at bedtime.	Sig: Tab $\bar{1}$ qid ac & hs
Refills remaining: 1 Rx 3462 Dr. Jacobs	Dispense: 90 Refill X2 T. Jacobs, M.D. 12/17/92

Pharmacy Label

1026 Rams Lane 932-4868
Jones Pharmacy

Cecil Jones 12/17/92

Tetracycline 50 mg tabs #40

Take one tab four times a day until medicine is gone

Rx 1742 Dr. Jacobs
Refills remaining: 0

Prescription

1942 Arlington 203-7983
T. Jacobs, M.D.

Cecil Jones
1026 Center

Tetracycline 250 mg caps
Sig: Caps $\bar{i}$ qid until gone

Dispense: 40
Refills: 0
T. Jacobs, M.D. 12/17/92

1026 Rams Lane 932-4868
Jones Pharmacy

Billy Smith 12/17/92

Valium 5 mg #80

Take one tablet three to four times daily

Rx 1946 Dr. Jacobs
Refills remaining: 2

1942 Arlington 203-7983
T. Jacobs, M.D.

Billy Smith
102 Lincoln

Valium 2 mg
Sig: Tab $\bar{i}$ or $\bar{ii}$ tid to qid prn Relaxation

Dispense: 50
Refill: x2
T. Jacobs, M.D.
12/17/92

3. Where and how must drugs be stored in residential facilities? Include rule for storing controlled substances.

4. List four reasons a resident may be given a medication and give an example (disease, symptom) for each reason.

   a.

   b.

   c.

   d.

5. List some common drug side effects. Explain the role of the medication manager in recognizing and reporting these.

6. Define each of the following drug actions; describe what the medication manager might observe if these actions occur.

   a. Therapeutic effect

   b. Allergic reaction

   c. Anaphylactic shock

   d. Idiosyncrasy

   e. Potentiation

   f. Toxic effect

7. Describe the "unique" qualities of the following drug preparations.

Enteric coated tablets:

Scored tablets:

Spansules:

Suppositories:

Ointments:

Elixirs:

8. Select a resident who is on medication in your facility and answer the following questions regarding the medication.

a. Why are they on the drug (reason it is being given).

b. What affect has the drug had? How long did it take for the affect to start.

c. What are the common side effects of the drug?

d. Does the resident have any other side effects? Which?

e. Are there "special precautions" for administering the drug?

Unit III

Administering Medications

OVERVIEW:

This unit discusses methods to safely administer nonparenteral medications. Included are the six rights as well as selected study questions related to problems that may occur.

OBJECTIVES:

1. Describe procedures for determining if label information is correct.
2. Define PRN and explain when PRNs can be given to residents.
3. List the six rights of medication administration and demonstrate their use in medication administration.

INTRODUCTION:

To safely administer nonparenteral medication, the medication manager must know and practice the six rights of drug administration. They must also be alert for problem situations that can occur, and they must know how to handle these situations.

Prescription Labels

The label on the prescription bottle must be easy to read and clear. If you have any questions regarding amount to be given, time it is to be given or name of medication or resident's name, you must have the label replaced before giving the medication.

PRN Medications

PRN means whenever necessary. PRN medications are usually given to relieve recurring symptoms such as pain, constipation, allergic reactions, colds, fevers, etc.

Most PRN medications are over-the-counter medications. This does not mean they cannot cause severe reactions. PRN medications should NEVER be given without carefully assessing the resident's condition and clearly understanding the action of the drug as well as any associated precautions. For example, laxatives should not be given to persons with severe abdominal pain, aspirin can cause nausea and vomiting if given on an empty stomach, cough medicine should not be followed by water, etc.

The process for giving a PRN medication will require you to review your institution's policy, check the standing orders, determine the resident's condition requiring the medication and making sure you are giving the correct PRN medication to alleviate the resident's complaint. Always check the medication record to see if someone else has already given the medication.

PRN medications are generally found as "stock" drugs. This means there will not be individual prescriptions for each resident. The procedure for safely preparing and administering the medication will be the same as for regularly prescribed medications.

The administration of the drug MUST be recorded immediately after it has been given. This is to alert other medication administering personnel as to when and what the resident has already had to relieve the complaint.

Residents who have been given PRN medications should be re-evaluated in 30-60 minutes to determine if the PRN medication has had the desired effect. The result should be recorded and/or reported. If the symptom persists, the nurse or supervisor should be notified.

Child Caring Facilities

Each type of facility has a procedure for the administration of PRN medications. This procedure generally requires that physician standing orders identify what medication can be given for what condition and how frequently it can be given, e.g., "Aspirin, 2 tablets, every four hours for headache. Do not give more than six tablets in 24 hours."

MR Facilities

Medication managers in residential facilities for the mentally retarded may administer over the counter analgesics and over the counter laxatives on a PRN basis. If it is necessary for a resident to receive another PRN medication, the medication manager must contact a nurse or a physician before administering. When contacting a nurse or physician, it is necessary to be able to describe in detail the complaints the resident has that you feel would be relieved by administration of a PRN medication. It is also important to record the resident's reaction to the medication.

Here is a sample of standing orders for PRN medications. Compare it with the policy in your facility.

DOWN HOME

STANDING ORDERS FOR MEDICATIONS

ASPIRIN or TYLENOL - two tablets every four hours for fever or pain.

MIDOL - one tablet every four hours for menstrual cramps.

CONTACT - one capsule every twelve hours for nasal congestion, only if really needed.

ROBITUSSIN DM - one teaspoon every four hours for coughs, only if really needed and not to exceed two ounces.

CHLORASEPTIC LOZENGES - one as needed for cough or sore throat, only if really needed.

CARMEX - apply as needed for cold sores or fever blisters.

KAOPECTATE - one tablespoon after every loose stool for diarrhea.

MILK OF MAGNESIA - two tablespoons as laxative for constipation or two teaspoons as antacid.

DESINEX POWDER or TINACTIN CREAM - for athletes feet.

CRUEX POWDER - for jock itch, apply nightly.

PEROXIDE - to clean small cuts and scrapes.

MYCITRACIN OINTMENT - to apply to small cuts and burns.

FOSTEX SOAP - for acne, use once or twice daily, rinse well.

BENOXYL 5 LOTION - for acne use after washing face.

VASELINE - as needed for chapped lips and skin.

CALAMINE LOTION - for itching of mild skin rashes and insect bites.

SYRUP OF IPECAC - for poisoning--only as directed by Poison Control or physician.

John Doe
Physician

Mary Jane Doe, R.N.
Mary Jane Doe, R.N.

Iowa
State Department of Health

LUCAS STATE OFFICE BUILDING
DES MOINES, IOWA 50319
(515) 281-4130

NORMAN L. PAWLEWSKI
COMMISSIONER OF PUBLIC HEALTH

February 1, 1982

TO: RESIDENTIAL CARE FACILITY ADMINISTRATORS

FROM: J. N. BUCKLEY, CHIEF
DIVISION OF HEALTH FACILITIES

RE: ADMINISTRATION OF PRN MEDICATIONS BY CERTIFIED MEDICATION AIDES

Medication aides are taught while taking the course "Administration of Non-Parenteral Medications for Nurse Aides", they may not administer PRN medications without checking first with a licensed nurse who can assess the medical need for the medication. This course does not provide the background training necessary to enable a medication aide to assess a patient's medical needs.

The Department realizes a preponderance of the residential care facilities do not have a nurse on the staff whom the medication aide could contact. Therefore, the Department will approve medication aides to administer the following without contacting a nurse or the physician as long as there is a written PRN order: (1) over the counter analgesics such as aspirin, tylenol, etc.; and (2) over the counter laxatives. They must contact a nurse or the physician before administering other over the counter and prescription medications.

This policy is to be followed and should be written on the "list of responsibilities" of the medication aide.

This policy was developed with the advice of the Iowa Board of Nursing and the Iowa Board of Pharmacy.

If there are any questions please contact this office.

BLB/ba

The Six Rights

Right Drug

1. Read the prescription label or label on the unit dosage package.
2. Be sure the label is clear as to name, drug, dose, time.
3. Select the right drug from the cupboard, cart, or tray.
4. Read the label three times: 1) when taking from the shelf, 2) before placing in the proper container, and 3) when returning it to the shelf or tray.
5. Look at the appearance of the drug; note odor or color.

* Caution: residents with same last name or names that look alike can cause errors.

Right Dose

1. Read the medication label - determine if the amount of drug is clear.
2. Look at the dose on the label.
3. Measure accurately.
4. Consider how many tablets or capsules for the dose. If unclear, check with supervisor or pharmacist.

Right Time

1. Read the label or check policy/procedure book for correct time.
2. Give the drug at the time ordered. (One-half hour before or after the designated time is acceptable.)

* Caution: some drugs need to be given before or after meals or with meals.

Right Resident

1. Be sure the resident's name is legible on the container.
2. Follow facility policy.
3. Ask resident their name.
3. If in doubt, ask another staff member who knows resident.

Right Method

1. Read the label.
2. Know the methods for giving drugs; orally, hypodermically, rectally, topically, etc. If not specifically stated on the label, drugs are to be given orally.
3. Give only drugs you have prepared.
4. Follow oral medications with plenty of water.
5. Make sure the medication is swallowed.
6. If you have any questions regarding how a drug is to be given, ask.

Right Charting and Reporting

1. Immediately report any medication not given or any resident's reactions that are unusual to the supervisor.
2. Know facility policy for recording medications.
3. Record the administering of the mediation as soon as you are finished.
4. Be sure drug name, amount, route and time are recorded.
5. Correctly sign the recording with your initials.

Some "Drug Don't" to remember to prevent errors:

1. Don't record a medicine until it is given.
2. Don't talk or converse when setting up medications.
3. Don't leave medicines unattended.
4. Don't give a medication that has not been ordered by medical practitioner.
5. Don't crush or mix medicines together without checking with supervising nurse or pharmacist.
6. Don't use drugs from unmarked containers.
7. Don't use drugs which show change in:
   a. color.
   b. consistency.
   c. odor.
8. Don't crush drugs without checking with supervisory nurse or supervisor.
9. Don't use residents' medications interchangeably.
10. Don't use any medication which has fallen on the floor.
11. Never give any medicine that someone else has prepared. If a mistake occurs, you will be held responsible.
12. Don't chart medications as given, if you have not given them.
13. Don't prepare liquid medications ahead of time.

Listen when a resident questions a medicine, if he/she has been getting a red pill and is offered a white one instead, it is not surprising if he/she suspects a mistake. Recheck the order, the label, the medicine card and medication set up. Refer to pharmacist, if necessary.

Problems in Administration of Medications

When giving medications, you may have residents who refuse to take a medication. If this happens, report to the supervisor or pharmacist. He/She may call the physician for a liquid or hypodermic medication substitute. If the medication is not given, record on resident's chart in the nurses' notes and chart "refused" medication.

If residents are ill, they may not be able to retain the medication because of vomiting. Again, report this to the supervisor or pharmacist, informing him/her of the amount lost, color of emesis, time lapse between taking medicine and the emesis, and the condition of the resident. You will then chart this information. If the medicine was returned to the emesis intact, the supervisor may need to call the physician to get an order to administer the medication by another route.

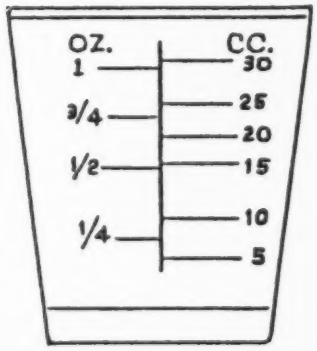
Difficulty Swallowing Medication

Many residents have difficulty swallowing medications, especially large capsules and tablets. Persons with disabilities may have conditions that cause problems in swallowing. These conditions may require a change in the drug dosage or the form in which the drug is administered.

The person administering medications can do many things to make it easier for the resident to take oral medications. Several suggestions are listed:

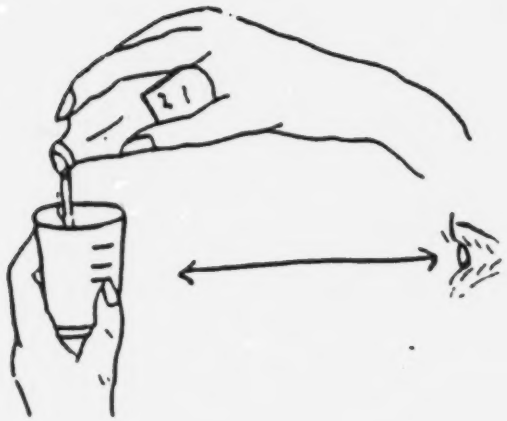
1. If possible, have the resident in a sitting position to make swallowing easier. Give resident a sip of water to lubricate the mouth before giving the medication.
2. If you are giving several medications, always give one medication at a time with adequate fluid.
3. If the resident needs, you can place the medication well back on the tongue, to make it easier to swallow.
4. A tube or straw for drinking may assist in swallowing.
5. Allow the resident time to take a good breath or two and relax before giving the second medication and after each one until all are taken.
6. In case problems would arise, give the more vital medication first.
7. Give liquid medications slowly and give sips of water following each sip of medication.
8. Watch for choking. Get help immediately if the resident begins coughing or develops a bluish or purplish discoloration to his/her face.
9. Check to be sure each medication is actually swallowed.
10. Give sublingual medications last and instruct resident not to swallow the pill but to let it dissolve under the tongue.
11. Check with supervisor or pharmacist for permission to give medication in ice cream, pudding, applesauce, jelly, etc. Do not crush the medication unless you have checked.
12. If all these are tried and problems still occur, go to the supervisor or pharmacist. He/She can ask the physician to change the medication to another form.

Special Procedures for Liquid Medications



Medicine cup

Liquid medications must be prepared at the time they are to be administered. If label so indicates, "Shake Well" before opening container. Liquid medication will then be poured into a medicine cup. When pouring, hold bottle with label in the palm of the hand to avoid spilling on label. When measuring, hold at eye level and mark desired volume with thumb. Read the volume at the low level of mesiscus (the surface of the column of liquid).



After pouring, wipe the neck of the container with a damp cloth or paper towel. This prevents the container from becoming sticky.

Do not mix liquid medications with other medications.

Safe Administration of Medications

1. The resident should be in an upright position when taking medications. If the resident still has problems swallowing, give them water first. This helps lubricate throat, then give them one tablet/capsule at a time with plenty of water. If this doesn't help, medications can often be crushed or these medications are available in liquid form. Check with your supervisor regarding which medications can be crushed or for obtaining the liquid preparation from pharmacy supply.
   *Remember: enteric coated tablets may never be crushed. The enteric coating is used so these tablets do not dissolve until they reach the small intestine.

2. Review medications to be given and determine which you will give first. Generally, give tablets and capsules first, and follow with plenty of water (absorption takes place in small intestine and the water assists with faster absorption).

3. If a liquid is ordered and it tastes bitter, you may generally follow with a juice. If the resident is receiving a sublingual medication, you will give it last (do not give with water). It must be dissolved under the tongue.

4. If a suppository is to be given, provide privacy for the resident.

5. Stay with the resident until all medications have been taken. Never leave medicines at bedside or with resident to be taken later.

6. Be alert and listen for any unusual reactions or comments resident makes that might be related to a medication the resident is receiving. Use your judgment and in some instances you may need to check with supervisor or pharmacist before giving the medication.

Now that you have safely given the right medication, in the right dosage, at the right time, by the right route, to the right resident, you must correctly record the medication.

General Rules for Recording Medications

The record is confidential in nature and its contents should neither be shown nor discussed with anyone not administering care to the resident. This includes the family. The resident, however, does have the right to know the contents of his/her chart, but it is generally the responsibility of the licensed personnel (and not yours) to make the contents known to the resident or their family. You should also remember that accounts of the resident's condition are written and signed by the person giving the care.

Below are listed general rules which are applicable to charting. Where these rules differ from those adopted by your employing agency, you should follow the latter.

1. When charting medications, chart directly from the medication card or container prescription. This is the only way you can be sure that you are charting the correct name and time by the correct route. When a medication is not given, the chance of medication charting error is increased. Be aware of this.

2. For each medication given by you, your initials must appear below the correct date and opposite the medication administered in the space allotted for the time of day the medication is ordered.

3. Your initials and full signature must be found in the appropriate space on the bottom of each medication record sheet, or where your facility has determined it to be.

4. Ditto marks must not be used.

5. Do not erase. If the chart is called into court, erasures provide reasons for legal questions to be raised. If you make an error in recording, draw a line through it and initial. Write the word error above the line and then correctly chart the medication.

6. Record after administration of the medication as soon as possible to avoid errors or repetition or to avoid forgetting special comments, errors or refusals.

7. If the resident refused the medication or for some physical reason (e.g., vomiting) cannot take or retain medication, follow the institution's procedure, write your initials inside the circle and chart the reason or condition for this refusal in the nursing notes. Report immediately to the supervisor.

8. If a medication cannot be administered as ordered due to a contraindication, print "held" in the appropriate box and note reason in the nursing notes. Notify your supervisor immediately regarding your actions and reasons for withholding the medication.

9. Remember that charting is not done correctly unless it contains your initials or full signature. Your title must also be indicated.

10. Never chart that you have given a medication unless you set up the medication and administered it.

11. If you have not observed the resident take the medication, you cannot chart that it was taken by the resident.

12. Report any unusual reaction resident has to a drug to your supervisor immediately.

13. PRN medication administration must be recorded immediately on the medication sheet and the reason for giving it plus the results (if it relieved the complaint) also record on notes.

14. When recording in notes, follow the correct procedure, e.g., print, fill lines, sign name, etc.

Errors

You have made an error in administering medications if you have not observed each of the "six rights", which are:

1. RIGHT RESIDENT.
2. RIGHT TIME.
3. RIGHT MEDICINE.
4. RIGHT DOSE.
5. RIGHT METHOD OF ADMINISTRATION (i.e., right route).
6. RIGHT METHOD OF RECORDING.

It must be stressed that a medication error is defined as any violation of the six rights.

An error which occurs in setting up, passing or recording a medication must be reported immediately. An error shows a breakdown in the system and is a serious occurrence even though the effect on the resident may not be serious.

Although an error is serious, it can often be corrected if reported immediately. If an error is made and you do not report it, it could seriously affect the resident. As a medication manager you are given a new and very serious responsibility in the administration of nonparenteral medications, and with that responsibility comes the absolute necessity for honesty. Remember - to err is human - we have all made errors--and admire the person honest and brave enough to put the resident first and admit an error.

What To Do When An Error Occurs

1. The supervisor or pharmacist must be notified immediately when an error occurs. They will consult with the physician.

2. The medication error report form is filled out. All questions must be answered completely. The form is signed by the person making the error, the supervisor (check facility policy).

3. Record in the resident's chart exactly what happened, what was done and how the resident was affected. There must be follow-up charting, which reflects any long-term affects.

4. If more than one resident is involved in the error, there must be charting on each involved resident's chart.

5. Sign all entries.

SAMPLE

INCIDENT REPORT

Date and Time of Incident _____

Resident Involved _____
Parent or Guardian _____
Case Worker _____

Staff Member Reporting Incident _____
Position _____

Name of Supervisor _____
Time Notified _____

Medication (before incident, 4 hours) _____

Mental Condition of Client Before Incident (well oriented, confused, depressed, uncooperative, aggressive) _____

Description of Incident (effect on client, sequence of surrounding events and other persons involved _____
_____

Physician Notified _____
Time Notified _____

Psychologist Notified _____
Time Notified _____

Caseworker or P.O. Notified _____
Time Notified _____

Other Persons Notified _____
Time Notified _____

Incident follow-up (recommendations of staff notified, precautions and action taken).

Signature of Person Reporting Incident _____

Signature of Person in Charge When Incident Occurred _____

Signature of Director, if other Than Person in Charge _____ _____

Procedure for Handwashing

Purpose:
Handwashing is an essential part of safely preparing and administering all medications. Following are guidelines for correct handwashing.

Equipment:
Soap (Dial bar soap or liquid detergent containing 3% hexachlorophene)
Water
Paper towels

Procedure	Important Points to Remember
1. Turn on water in the sink.	
2. Wet hands.	To work up lather.
3. Soap hands, using friction; wash entire surface of hands and well up on writs for one minute.	Especially between fingers and around and under fingernails.
4. Rinse hands under running water.	Hands lowered so that water runs from wrists toward fingers.
5. Repeat steps 2-3-4.	
6. Rinse bar soap.	Soap, water, and friction kills germs.
7. Dry thoroughly.	

Oral Preparation

Procedure:

1. Assemble necessary equipment.
2. If policy in facility, check medication order against resident chart.
3. Know or look up purpose, side effects and special precautions of medications to be given.
4. Wash hands.
5. Check label for legibility, name of resident, name of drug, and time of administration.
6. Pour right amount of medication into medication bottle cap, then into container to be taken to resident.

7. If liquid medication - shake if required, hold medicine cup at eye level, pour correct amount.

8. Take to resident. Identify resident.

9. Stay with the resident until you are sure he/she has taken all the medication/medications.

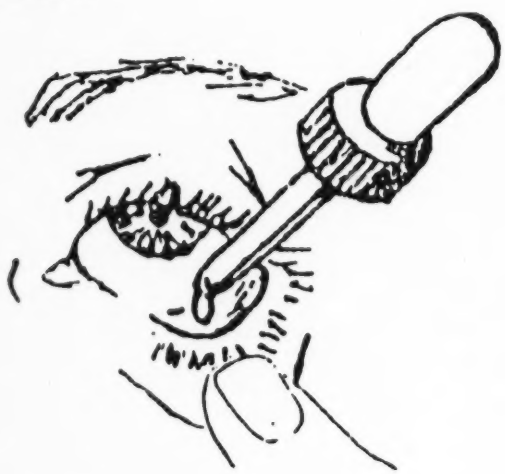
10. Have the resident drink water after taking medication.

11. Return and record medication.

Sublingual Administration

The procedure for giving sublingual medications follows that for oral administration of drugs. However, the medication is not swallowed; it is placed under the resident's tongue where it must be retained until it is dissolved or absorbed. The number of drugs that may be administered in this way is limited.

Instillation of Eye Drops



1. Assemble necessary equipment. Check resident's order if required by policy.

2. Check prescription label for legibility.

3. Know purpose, side effects and contraindications of medications.

4. Wash hands.

5. Place container on medication tray.

6. Include a sterile eye dropper, if necessary.

7. Carry to resident.

8. Identify resident by name.

9. Explain procedure to resident.

10. Have resident properly positioned.

11. Observe affected eye for any unusual condition which should be reported before medication is instilled.

12. Cleanse eye with clean cotton ball, wiping from inside to outside; using clean cotton ball for each eye (if both eyes are to be treated).

13. Draw up correct amount of medication into eye dropper. Check label on medication for amount.

14. Position resident in either a lying position or sitting with head back and chin tilted. Separate eye lids by raising upper lid with forefinger and retracting lower lid with thumb. Approach eye with dropper from below the eye, out of field of vision. Avoid contact with the eye.

15. Apply drop(s) gently near center of lower lid. Do not allow drops to fall more than one inch to eye.

16. Gently close eye. Ask resident to keep eye closed for a few minutes.

17. Wipe excess medication with a clean cotton ball, using a clean cotton ball for each eye treated.

18. Wash hands.

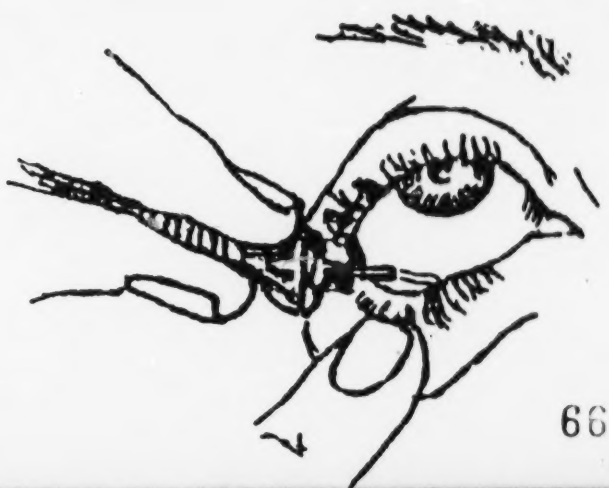
19. Check label on medication container and return.

20. Chart medication administered.

21. Clean and replace equipment.

22. Observe and chart results and condition of eye.

Instillation of Eye Ointment



1. Assemble equipment necessary for administration of eye ointment.
2. Check prescriptions label for legibility.
3. Know purpose, side effects and warnings of assigned eye ointment.
4. Wash hands.
5. Check label of medication container for correct medication, resident, etc. Be sure label stated ophthalmic or for use in eye.
6. Place container of eye medication on the medication tray.
7. Carry to resident.
8. Identify resident prior to administration.
9. Explain procedure to resident.
10. Have resident sit or lie down.
11. Observe affected eye(s) for any unusual condition which should be reported.
12. Cleanse the eye with a cotton ball wiping from inner corner outward once, using a clean cotton ball for each eye (if both are to be treated).
13. Remove cover from ointment, checking that label on the medication corresponds with the medication ordered.
14. Waste first portion of the ointment as it comes from tube.
15. Position resident with head back and looking upward, retract lower lid. Approach eye from below, outside the resident's field of vision, using due care to avoid contact with the eye.
16. Apply ointment in a thin layer along inside lower lid.
17. Hold lid open a few seconds.
18. Gently close eye. Ask resident to keep eye closed for a few minutes.
19. Wash hands.
20. Check that the label on the medication container corresponds with the medication listed on the medication card when returned.
21. Chart medication administered.
22. Clean and replace equipment.

Instillation of Ear Drops

1. Assemble equipment necessary for instillation of ear drops.
2. Check label for legibility.
3. Know the purpose, side effects and warnings of the assigned ear drops.
4. Wash hands.
5. Remove medication from the resident's supply, check that the label on the medication container lists ear.
6. Place the medication on a tray.
7. Include a dropper, if one is required but not included in the container.
8. Carry medication to the resident.
9. Identify the resident prior to medication administration by verifying name.
10. Explain procedure to the resident.
11. Position the resident.
    a. If lying in bed, put bed flat and turn head to opposite side.
    b. If sitting in chair, tilt head sideways until ear is as horizontal as possible.

12. Clean entry to ear canal with a clean cotton ball,

13. Observe affected ear for any unusual condition prior to ear drop instillation. Any unusual condition should be reported to supervisor.

14. Draw up medication into dropper, check that the label on the medication container corresponds with the medication ordered on the medication card.

15. Administer the ear drops by pulling the ear gently backward and upward and instilling the number of drops ordered into the ear canal. Do not contaminate the dropper by touching it to any part of the ear canal.

16. Place a clean cotton ball loosely in the ear if the resident desires.

17. Instruct resident to maintain the required position for two or three minutes.

18. If drops ordered for both ears, wait at least five minutes before putting drops in second ear, repeat same procedure.

19. Wash hands.

20. Return medication to resident's supply checking that the label on the medication container is correct.

21. Chart the ear drops administered.

22. Clean and replace equipment.

Procedure for Administration of Nasal Medications (Spays and Drops)

1. Know or look up effects of medication.

2. Wash hands.

3. Assemble necessary equipment: medication, tissues (dropper, if giving drops and one is not in the bottle).

4. Examine medication for color. (Change in nose drop medications occur rapidly.)

5. Explain the procedure to the resident.

6. Position the resident. Resident should lie on his/her back with head tilted back. May use pillow under shoulders (be sure and support head).

7. Administer medication.
   a. Nose drops - measure correct dosage on marked dropper. Hold dropper just above nostril in upright position. Drop medication into one nostril. If ordered, repeat procedure for other

nostril. Keep resident in same position for a few minutes to allow for absorption.

b. Nose spray - have resident breathe through nose with mouth open. Insert tip of container into one side of nose. Squeeze container 2-3 times quickly.

8. Provide tissue for wiping nose.

9. If using drops, discard unused medication in dropper. Clean dropper. If spray was used, before replacing the cap, clean the piece inserted into the nostril.

10. Return medication to supply cupboard or medication cart.

11. Observe and record/report results.

Procedure for Administration of Rectal Medications

1. Obtain suppository from resident's supply (may be in refrigerator). Check for legibility, name, etc.

2. Wash hands.

3. Explain the procedure to the resident.

4. Provide for privacy, screen the resident.

5. Position the resident on his/her left side, if possible.

6. Lubricate tip of suppository with water very sparingly.

7. Using a glove, insert suppository into rectum past the anal sphicter. Insert the suppository against the bowel wall.
*Remember, having the suppository embedded in fecal material would destroy its action.

8. As you insert the suppository, you may help resident relax by asking them to breathe through their mouth.

9. Clean up your equipment.

10. Observe and chart results.

Rectal medications can be given by enema, suppository or cream. This route of administration is useful when the resident is unconscious, uncooperative or nauseated. It is also useful if the medication has a very offensive taste or if digestion would render the drug ineffective. There are some disadvantages in this method: if expelled there is no way of knowing how much was absorbed, and only certain medications can be given by this route.

Topical Administration

Application to the skin or mucous membrane is used for antiseptics, antibiotic ointments or soothing drugs that are applied directly. Drugs used for topical application can be either liquid or an ointment. The following procedure is to be used.

Wash hands first. Know exact area to be covered by medication. Follow prescribed procedure to check on rights.

a. Ointments are applied to any part of the skin by direct application, or they may be applied as a dressing by smearing a piece of gauze with the medication. If the medication must be removed from the container (jar, etc.), use a tongue blade - do not use your fingers.

b. Lotions are swabbed on the skin for their antiseptic and/or astringent affects.

c. Liniments are rubbed on the skin to relieve soreness of the muscles and joints.

d. Aerosols may be sprayed on the skin without touching the skin. This has a great advantage when the skin is irritated or burned. (Avoid the face, especially eyes, nose and mouth.)

e. Gargles are solutions that are bubbled in the throat by keeping the solution in the upper throat, tilting head back, and exhaling air creating bubbling.

f. Sprays are used principally to treat nose and throat conditions.

Procedure for Administering Medications by Inhalation

Inhalation - The act of drawing breath, vapor or gas into the lungs.

Purpose of Giving Medications via Inhalation - Provides air (warm or cold) in form of a medication for person to breathe at regular intervals prescribed by a doctor. These medications have either a systemic or a local effect.

1. Treat respiratory infections - warm steam.
2. Treat serious respiratory disease such as asthma, emphysema.
3. Supply a medication that can be absorbed into the blood stream - such as medications used in heart diseases.

Inhaler - A small hand held device, usually an aerosol unit, used for delivering medications to the lungs, bronchi. Families of drugs that are given by inhalers include bronchodilators, such as provental; mycolytic agents, such as bronkosal; steroids, such as vanceril. The drugs are administered via a mist or spray.

Process - The process for administering these medications is usually detailed on the container and should be followed carefully. Most administrations require cooperation and assistance from the resident. The resident usually is required to let all air out of lungs, seal inhaler with mouth, depress inhaler to release medication take a deep breath and hold for as long as possible. This is usually done twice, with a 5-10 minute wait between administration.

Precautions - These medications are often ordered PRN by the doctor with a recommended time interval and a maximum administration limit. The directions should be followed carefully because residents can get rebound, bronchospasms, cardiac effects if they are over used. As with every medication, residents should be observed carefully to note the therapeutic effects.

Procedure for Application to Skin

1. Explain to the resident what you are going to do and how they can assist.

2. Position the resident and observe area you are applying the medication. Note any complaints the resident may have (i.e., rash, itching). If open wounds or sores, or any questions, consult your supervisor or pharmacist before applying the medication.

3. Administer the medication as directed on the prescription label.

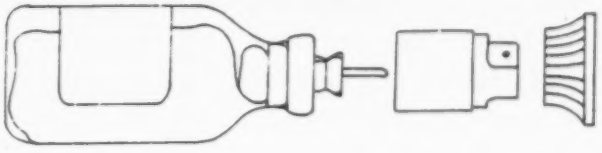
4. Chart and report any significant observations (i.e., color, condition of skin) to the supervisor.

Patient teaching

Home care

How to use a metered-dose nebulizer

1 Dear Patient:
Inhaling the medication in this metered-dose nebulizer will help you breathe more easily. Use it exactly as your doctor ordered at these times: _____
Here's how: First, remove the white mouthpiece and cap from the bottle. Then, remove the cap from the mouthpiece.



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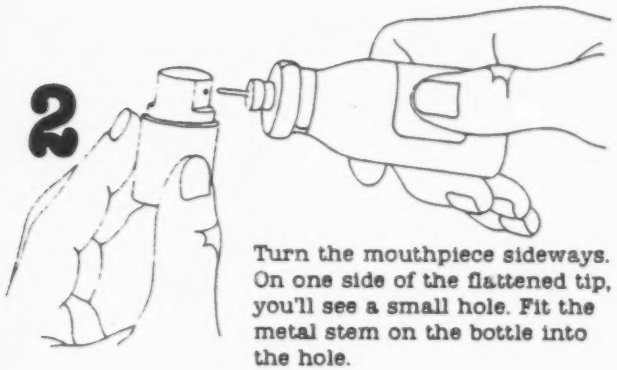


Turn the mouthpiece sideways. On one side of the flattened tip, you'll see a small hole. Fit the metal stem on the bottle into the hole.

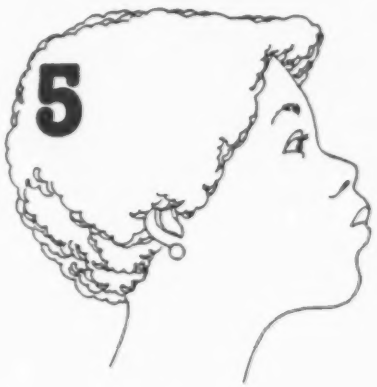
3

Now, exhale. Hold the nebulizer upside down, as you see here, and close your lips loosely around the mouthpiece.

4

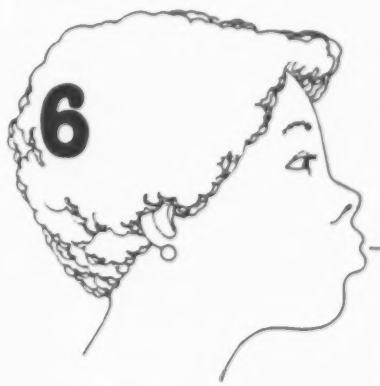
Inhale slowly. As you do, firmly push the bottle against the mouthpiece—one time only—to release one dose of medication. Continue inhaling until your lungs feel full.

5



Take the mouthpiece away from your mouth, and hold your breath momentarily.

6



Then, purse your lips and exhale slowly. If the doctor directs, repeat the procedure. Important: Never overuse your nebulizer. Follow your doctor's instructions exactly. Finally, rinse the mouthpiece with warm water.

Figure 3-14

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Study Questions for Unit III

1. What are the six rights for medication administration.

2. List the three times you check the label when administering medications.

3. List the six questions you should have answered before you administer any medication.

4. Who is responsible for reporting resident reactions to medication?

5. What is your facility's policy for administering medications if the resident is not at the facility?

6. How will you report a medication error at your facility?

7. What PRN meds can be given at your facility?

8. What should you do if a resident tells you that is not the medication they've been taking?

9. What action do you take when a resident refuses their medication?

10. Write the step by step procedure you will follow in giving oral meds.

Unit 4

Selected Drug Families

OVERVIEW:

This unit of study investigates the nonparenteral medications that are more commonly ordered in the residential facilities. The medications are listed by families. The families of drugs have common actions and side effects.

OBJECTIVES:

1. Explain what one needs to know about a specific drug to safely administer the drug.
2. List selected drug families and describe some general properties of each family.
3. Identify properties, precautions and methods to safely administer nonparenteral medications in each of the identified drug families.

INTRODUCTION:

The medication manager must know some basic facts about every medication they give. These include actions, side effects, special precautions.

It would be impossible for anyone to remember all necessary facts about every drug on the market. It is more important that one knows how to look up and use drug information.

Drugs are grouped or classified according to their actions and/or the body system they affect. These drug families or classifications often have several properties in common including therapeutic action, side effects, and special precautions for administration. If you know the drug family to which a drug belongs, you will know a little about the drug.

<u>Common Drug Families (Classification)</u>

Analgesic	Drugs used to relieve pain, some are controlled substances. Examples - Aspirin, Emperin, Tylenol, Darvon, Butazoliden, Indocin. Side effects - nausea and vomiting.
Antacid	Drugs that neutralize acids of the stomach thus relieving burning, nauseated feeling. Examples - Maalox, Gelusil, Amphojel, Riopan.
Antibiotic	Drugs that kill or slow the growth of bacteria. Examples - Penicillin, Tetracycline, Keflex, Streptomycin, Bacitracin, Neomycin. Side effects - gastrointestinal upsets and diarrhea. Be alert for evidence of allergic reactions such as rashes.

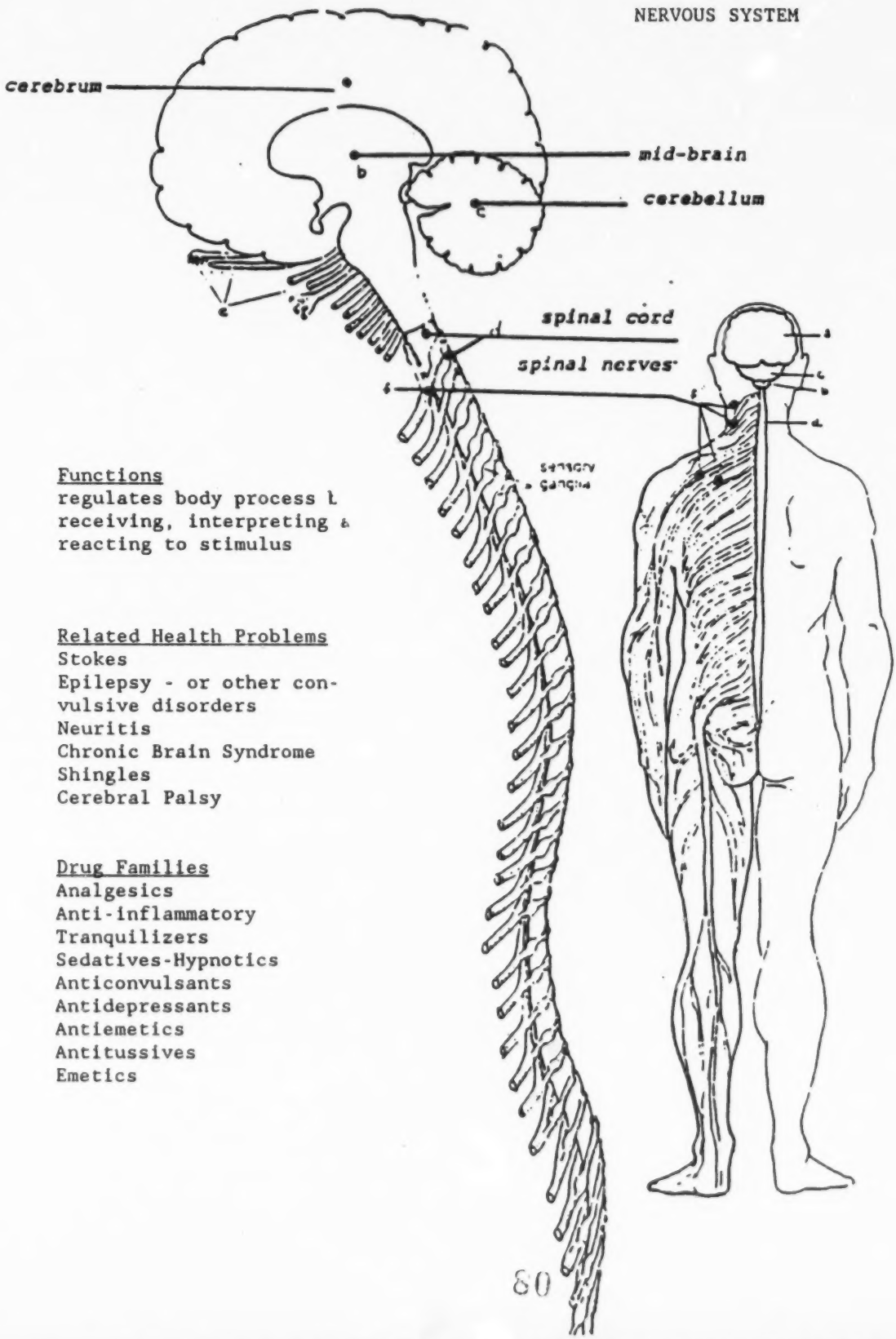
Anticonvulsants	Drugs the prevent seizures. Examples - Dilantin, Phenobarbitol. Side effects - drowsiness.
Antidepressant	Drugs that prevent or treat depression. Examples - Elavil, Tofranil, Norpramin, Lithium. Side effects - gastrointestinal complaints, headache, insomnia. Watch closely for suicidal attempts of depressed residents; when they begin to feel better, they may be more capable of carrying out suicide intentions.
Antidiarrheal	Drugs that treat diarrhea or loose stools. Examples - Lomotil, Paregoric, Kaopectate Side effects - constipation.
Antiemetic	Drugs that treat nausea and prevent vomiting. Examples - Dramamine, Vistaril, Antivert, Compazine, Tigan. Many are given by suppository or injection. Some of the tranquilizers are useful as antiemetics. Side effects - drowsiness, blurred vision, hypotension, skin reactions.
Antihistamine	Drugs that relieve allergic symptoms such as itchy eyes and nasal congestion. Examples - Benadryl, Chlortrimeton. Side effects - dry mouth, drowsiness and confusion.
Antipruritic	Drugs that relieve itching of the skin. Examples - Calamine Lotion, Caladryl.
Antipyretic	Drugs that lower body temperature, relieving fevers. Examples - Aspirin, Tylenol, Ascriptin, Emperin. Side effects - nausea and vomiting.
Antispasmodic	Drugs that relax muscles and prevent muscle spasms. Examples - Donnatal, Artane, Probanthine, Robaxin, Tinc Belladona. Side effects - dry mouth, light sensitivity, urinary retention and hot, dry skin.
Antitussive	Drugs that decrease cough. Examples - Romilar, Codeine. Side effects - skin rash, chills, dizziness and drowsiness.
Diuretic	Drugs that increase urine output; by doing so decrease swelling on other body parts. Examples - Diuril, HydroDiuril, Lasix. Side effects - gastrointestinal upset, confusion and muscle weakness. Special precautions - usually given in a.m. Watch intake and output, weight and blood pressure. Observe for signs of electrolyte imbalance (weakness, fatigue, dizziness, and muscle cramps).

Expectorant	Drugs that reduce throat secretions and allows them to be coughed up. Examples - Terpin hydrate, Potassium iodide. Side effects - nausea and skin reactions.
Hormone	A substance produced mainly by the glands, transported by blood stream to regulate body processes. The hormones are reproduced synthetically and given as replacement drugs or additional hormones to assist the body in maintaining function. Female hormones are often used as birth control. Examples - Insulin, Thyroid, Estrogen, Corticosteroids, Testosterone. Side effects - specific to each.
Hypnotic	Drugs that produce sleep. Examples - Seconal, Phenobarbital, Nembutal, Chloral Hydrate, Doriden. Side effects - lethargy, disorientation, dizziness, blurring of vision, respiratory depression.
Hypoglycemics	Drugs that lower blood sugar by increasing effectiveness of insulin produced by body - ARE NOT ORAL INSULINS. Examples - Orinase, Diabinese. Side effects - gastrointestinal distress, light sensitiveness, rash. Special precautions - watch for hypoglycemic reaction (low blood sugar).
Laxative	Drugs that assist in passage of stool from the bowel. Methods they are 1) softening, 2) lubrication, and 3) stimulation. Examples - Castor oil, Dulcolax, Colace, Metamucil, Milk of Magnesia, Mineral Oil. Side effects - nausea, vomiting, abdominal cramping. Special precautions - do not give if resident is complaining of severe abdominal cramping.
Sedative	Drugs that calm, relieve anxiety and nervousness. Generally these agents accomplish action by depressing the CNS. Small doses of a drug may act as a sedative and a larger dose of the same drug may act as a hypnotic. Examples - Dalmane, Doriden, Placidyl, Noctec, Seconal, Nembutal, Phenobarbital. Side effects - lethargy, disorientation, dizziness, blurring vision, respiratory distress.
Stimulant	Drugs that increase functional activity - excite. Some drugs stimulate CNS. Many are controlled substances. Examples - Dexedrine, Ritalin, Caffeine. Side effects - restlessness, anxiety, irritability, insomnia, headache, palpitation of the heart, gastrointestinal disorders, hypertension.

Tranquilizer	Drugs that calm a person who is anxious. Some tranquilizers help eliminate hallucinations and delusions. Examples - Librium, Valium, Serax, Vistaril, Thorazine, Mellaril, Haldol. Side effects - drowsiness, low blood pressure, constipation, dizziness.
Tuberculostatic	Drugs used in the treatment of tuberculosis. Example - Isoniazid. Some of the drugs are antibiotics.
Urinary Antiseptic	Drugs that inhibit the growth of bacteria in the urinary tract. Examples - Gantrisin, Mandelamine, Furadantin, Pyridirim. Side effects - gastrointestinal upset.
Vasodilators or Antihypertensive	Drugs that relax and enlarge blood vessels. They lower blood pressure. Examples - Aldomet, Diuril, Serpasil. Side effects - low blood pressure, dizziness, headache. Should have blood pressure checked regularly.
Vitamin	Substance found in food products that aid in growth and health. Examples - Theragran-M, Poly Vi-Sol, Multiple vitamins. Special precautions - should not be given to replace good diet. Possible overdose with Vitamin A.

We will now explore how drug families and specific drugs affect the various body systems. We will briefly review the system, common disease conditions that affect the system, and explain how the drugs are used to correct the condition.

NERVOUS SYSTEM



Functions
regulates body process b
receiving, interpreting &
reacting to stimulus

Related Health Problems
Stokes
Epilepsy - or other con-
vulsive disorders
Neuritis
Chronic Brain Syndrome
Shingles
Cerebral Palsy

Drug Families
Analgesics
Anti-inflammatory
Tranquilizers
Sedatives-Hypnotics
Anticonvulsants
Antidepressants
Antiemetics
Antitussives
Emetics

INTRODUCTION

The first drug families to be studied act on the nervous system.

The nervous system is anatomically divided in two major parts: 1) Central Nervous System (brain and spinal column). The brain is divided into several major areas and controls motor activities such as speech, thinking, hearing, sight, respirations and heart beat. All body activities voluntary and involuntary are controlled by the brain. The spinal cord is a pathway that caries messages to and from the brain. 2) Peripheral Nervous System (nerves throughout the body). These nerves pick up messages and send them to the brain to be processed. They also return messages from the brain to body parts to control all body activities.

Drugs that affect the central nervous system usually do so by either depressing (slowing down or dulling perception) or stimulating (speeding up activity). Specific drugs affect certain areas of the nervous system; e.g., morphine dulls pain perceptors and depresses respirations, while codeine which also dulls pain perceptors, depresses the cough center. The unique chemical composition of each drug affects the system in a slightly different way.

I. Analgesics - Drugs That Relieve Pain
Drugs that relieve pain do so by depressing the nervous system. Analgesics depress the parts of the system that receive and send pain messages. Major subclassifications of analgesics are:

A. Narcotic Analgesics. This group of drugs is classified as controlled substances (usually Schedule II). Narcotic analgesics relieve moderate to severe pain. Side effects include constipation, pupil dilation, respiratory depression and confusion. Prolonged use of narcotic analgesics may lead to addiction. All procedures for controlled substances must be followed. Schedule II controlled substances must be reordered or discontinued after 72 hours.

B. Non-narcotic Analgesics. This family of drugs is very effective in relieving moderate to mild pain. Some of these are also useful in lowering body temperature, thus reducing fever (antipyretics). A common side effect with these drugs is nausea and vomiting, and occasionally persons taking the drugs also complain of ringing ears (tinnitus).

C. Anti-inflammatory Agents. Many of these drugs help relieve pain associated with arthritis by decreasing inflammation of the joint areas. Side effects include nausea, vomiting, and skin rash. Persons on these drugs should be watched for toxic effects since many of the drugs are very potent.

D. Antipyretics - Relieve Fever. In addition to relieving pain, several analgesics (Aspirin, Tylenol) cause a reaction that allows the body to release heat and in so doing, they lower a body temperature. These drugs are useful to relieve the symptom of fever.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Pain Relievers Non-narcotic (Analgesic) (Antipyretic)	Relieves mild to moderate pain	Ecotrin, Aspirin (acetylsalicylic acid) gr X q 4 hrs prn Oral or suppository	No	Heartburn Dizziness Sweating	Give with milk or after meals
	Aspirin, Tylenol also lowers body temperature (antipyretic).	Tylenol, Datril (acetaminophen) 300 mg q 4 hrs prn Oral or suppository	No	None	Use cautiously with residents who have liver damage
	Salicylates also relieve joint swelling and pain (anti-inflammatory)	Darvon (propoxyphene hydrochloride) 65 mg q 4 hrs prn	Yes Schedule IV	Dizziness Headache Drowsiness	May become habituated
	Neuromuscular system.	Norgesic (phenacetin) Tablets and capsules As directed	No	Dizziness	
	Ibuprofen is also an excellent muscle relaxant	Ibuprofen, Motrin, Nuprin 300-400 mg qid Oral	No	Blurred/ dimmed vision Cause fluid retention	Do not give with aspirin
	Inderal also useful for migrane headaches	Inderal (propranolol) (see antiarrhythmics)			
	Fiorgen and Nypersin are good for headaches	Fiorgen As prescribed		Drowsiness Restlessness	
		Nypersin As directed			

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Pain Relievers that also relieve swelling joints (anti-inflammatory)	Relieve swelling in arthritic and rheumatoid arthritis conditions Neuromuscular system Indocin is also an analgesic Zyloprim is effective in preventing gout	Indocin (indomethacin) 25 mg tid Oral	No	Nauseau Headache Dizziness Blood dyscrasia Rash	Give with food Complete blood counts routinely
		Zyloprim (allopurinol) 200-600 mg daily	No	Skin rash Drowsiness	Encourage fluid intake

II. Central Nervous System Stimulants

Drugs that stimulate the CNS speed up cell activity. These drugs are used for several purposes: to decrease fatigue, increase awareness and counteract CNS depressants. One of the most common drugs is caffeine. Many people drink coffee with caffeine in the morning to wake up. Drugs that stimulate can sometimes help relieve depression and apathy.

One group of stimulants, the amphetamines, have been used as appetite depressants in the past. The amphetamines are strong CNS stimulants and are often abused, therefore many are classified as controlled substances.

Stimulants sometimes have a paradoxical (opposite) effect on persons with minimal brain damage. These people will be given a stimulant for a calming effect. Ritalin, Cylert, and Dexedrine are often used for their paradoxical effect.

Residents who are on stimulants for calming effects should be observed for 1) inability to sleep, 2) loss of appetite, and 3) extreme nervousness.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Stimulants Some are also appetite depressants	Central Nervous System Used with adolescents for behavior control Ritalin useful in treatment of mild depression and narcolepsy	Cylert (pemoline) 37.5 - 50 mg/day in a.m.	Yes Schedule IV	Insomnia Anorexia Nausea Diarrhea/ Constipation Dizziness	May enhance other CNS stimulants
		Ritalin (methylphenidate) 10 mg bid or tid	Yes Schedule II	Nervousness Insomnia Tachycardia Nausea Dizziness	Do not give in marked tension or anxiety states or to residents with glaucoma or hypertension
		Desoxyn (methamphetamine HCL) 2.5 - 5 mg tid	Yes Schedule II	Nervousness Restlessness Insomnia	Gradually discontinue if on for a long time
		Dexedrine (dextroamphetamine sulfate) Children 2 - 15 mg daily in in 3 doses	Yes Schedule II	Tremor Headache Palpitations Nausea Anorexia	
		Dexedrine Spansules (dextroamphetamine sulfate) One spansule daily - released amounts	Yes Schedule II		

III. Drugs Used to Relieve Tension, Relax and Produce Sleep

A. Sedatives. Sedatives are drugs that depress the central nervous system and produce relaxation and rest. Often a sedative is used throughout the day and has a soothing quieting effect on the resident. Many of the drugs used as sedatives when given in larger dosages can produce sleep. When they produce sleep, the are known as hypnotics. Side effects of sedatives are lethargy, disorientation, dizziness, blurring of vision, and respiratory depression.

B. Hypnotics. A hypnotic is a drug that produces sleep if given in full strength and at bedtime only. The duration of action generally allows the resident to awaken at the usual time. Hypnotics should never be given to residents in place of good nursing care. Before giving the hypnotic, you should try to help the resident relax and sleep by doing the following:

1. Straightening bed linens.
2. Back rub.
3. Elimination of unnecessary noises.
4. Good ventilation.
5. Repositioning.
6. Light nourishment if diet allows.
7. Quiet conversation if anxious of upset.

C. Tranquilizers. Tranquilizers are drugs that relieve anxiety. They allow the resident to be more relaxed without causing confusion. Tranquilizers depress the part of the central nervous system that controls mood, causing a calming effect and relieving symptoms of anxiety, tension, hyperactivity, agitation and aggression. Tranquilizers are subdivided into major and minor. The minor tranquilizers (antianxiety) control mild forms of anxiety. Minor tranquilizers are subject to abuse, therefore many are "controlled substances." Major tranquilizers, sometimes called antipsychotics, help control more severe emotional symptoms such as hallucinations and delusions.

D. Antidepressant. This group of drugs works on brain centers to relieve deep depression. It is not certain how this occurs. These drugs do have dangerous side effects and do not mix well with other substances (alcohol, over the counter drugs, certain foods such as cheese, wine, liver).

There are two general types of antidepressants.

1. The Tricyclic types are the most commonly ordered. When first given they cause drowsiness, but will generally then work to relieve feelings and symptoms of depression. Drugs in this group include Elavil, Norpramin, Sinequan, Tofranil, Vivactil.

   The side effects do not seem to be as severe as the second group of antidepressants (MAO inhibitors). They do cause dry mouth, blurring of vision, constipation, delayed urination, drowsiness or restlessness, confusion, dizziness and headache.

2. The MAO Inhibitor antidepressants are useful in treating severe depressions which fail to respond to others. Commonly used drugs are Marplan, Nardil, Parnate. Side effects are more serious and include a sudden fall or rise in blood pressure, especially in elderly; dizziness, weakness, faintness, severe headache, sweating, nausea and vomiting. Persons on MAO Inhibitor antidepressants must be careful about taking other drugs and foods because of a chemical reaction that can occur. Among the foods are certain cheeses, pickled herring, chicken livers, sour cream, figs, wine, sherry and beer. Coffee and other caffeine products should be taken in small quantities.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Sedatives/ Hypnotics (Barbiturates)	Nervous system In smaller doses, relaxes (sedative) In larger doses, causes sleep (hypnotic) Phenobarbital also useful as anticonvulsant	Phenobarbital (sodium luminal) 16-32 mg qid (sedative) 100 mg h.s. (hypnotic) 100-320 mg divided dosages (anticonvulsant) Oral, I.M.	Yes Schedule IV	Drowsiness Hangover Blood malformation	Dependency

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Tranquilizers (minor) (antianxiety)	Nervous system Relieves mild to moderate anxiety Calming effect (produces mild sedation, skeletal muscle relaxants)	Librium (chlordiazepoxide) 5-25 mg 2-4 times a day Oral, I.M., I.V. Decrease dosage slowly	Yes Schedule IV	Drowsiness Dizziness Fatigue Constipation	Alcohol potentiates Dependency may may occur
		Valium (diazepam) 2-10 mg 2-4 times a day Oral, I.M. Decrease dosage slowly	Yes Schedule IV	Drowsiness Low b.p. Blurred vision Rash	Alcohol potentiates Dependency
		Vistaril, Atarax (hydroxyzine hydrochloride) 25-100 mg tid Oral, I.M.	No	Dry mouth Drowsiness Headache Dizziness	Potentiates other CNS drugs
		Navane (thiothixene hydrochloride) 2-5 mg qid Oral, I.M.	No	Lowers b.p. Tachycardia Dizziness Tremor	Routine blood tests
		Mellaril (thioridazine hydrochloride) 50-100 mg tid Oral	No	Dizziness Low b.p. Nasal congestion Blurred vision	Tell resident to rise slowly Dilute with fluid juice Avoid alcohol
		Lorazepam (ativan) 1 mg tid Oral	No	Some dizziness Low b.p.	Potentiates other CNS drugs
		Xanax (alprazolam) .25-1 mg tid	No	Drowsiness Ataxia Visual disturbances Nausea Vomiting	Give with meals

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Tranquilizers (major)	Nervous system Relieves moderate to severe anxiety Helps manage acute and chronic psychosis	Thorazine (chlorpromazine) 25-1000 mg daily Oral, rectal, I.M.	No	Sedations Dizziness Hypotension Dry mouth Mentrual irregularities Parkinsonlike symptoms	Good mouth care because of dry mouth Tell resident to get up slowly Stay out of direct sun
	Many are good anti-emetics	Mellaril (thioridazine hydrochloride) 50-100 mg 3 times a day Oral	No	Dizziness Lethargic Low b.p. Nasal congestion Blurred vision Urinary retention	Tell resident to get up glowly Dilute liquid form with fruit juice or other liquids Avoid alcohol
		Haldol (haloperidol) .5-2 mg bid up to 100 mg daily Oral, I.M. Haldol DEC - long lasting Give every 1-4 weeks	No	Parkinsonlike symptoms Dry mouth Urinary retention Low b.p.	Avoid alcohol and over the counter drugs
	Lithium is used primarily for manic reactions	Lithobid, Lithonate (lithium citrate) 300-600 mg tid Oral	No	Mild nausea Fine tremor Thirst Increased urine output Diarrhea Loss of appetite	Do not give to patient with heart/kidney Encourage fluid intake
		Prolixin (fluphenazine hydrochloride) .5-10 mg per day in divded dosages Oral	No	Fine tremor Salivation Dry mouth Weight gain	Routine blood tests Discontine gradually
		Prolixin DEC (fluphenazine decanoate) Adults - 50 mg q 1-4 weeks Pediatrics 6.25-18.75 mg weekly I.M., S.C.	No		Prolixin products need to be protected from light

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Tranquilizers (major) (continued)		Serentil (mesoridazine besylate) 25-100 mg tid	No	Low b.p. Drowsiness	Alcoholl potentiates
		Stelazine (trifluoperazine) 15-20 mg tid	No	Dizziness Tremor	
		Trilafon (perphenazine) 4-16 mg qid - oral Oral concentrate	No	Low b.p. Parkinsonlike tremors Blurred vision	Dilute concentrate with equal water/pop Do not mix with coffee, cola, grape or apple juice

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antidepressants (Tricyclic group)	Relieves depression and the anxiety that is often associated with depression Takes several days for effects. Sinequan oral concentration is to be diluted with water or juice. Tofranil is used for bedwetting in children. Anafranil useful in obsessive compulsive disorders Vivactil can be effective in obstructive sleep apnea	Elavil (amitriptyline) 25-50 mg qid Pediatrics - 5-15 mg bid Oral, I.M. Norpramin (desipramine hydrochloride) 25-50 mg tid increased slowly Pediatrics - 5-10 mg tid Oral Sinequan (doxepin) 25 mg tid - adults Oral Tofranil (imipramine hydrochloride) 10-25 mg qid Oral Anafranil (clomipramine hydrochloride) 25 mg daily increased to 100 mg Children - same Asendin (amoxapine) 50 mg tid - adult 25 mg tid - geriatric Vivactil (protriptyline hydrochloride) 5-10 mg qid 5 mg tid adolescent-elderly Pamelor (nortriptyline hcl) also aventyl hcl 25 mg qid	No No No No No No No	Dry mouth Blurred vision Constipation Delayed urination Sweating Insomnia Hypertension Nausea Rash	Careful when giving to persons with glaucoma or prostate problems Do not give with MAO group Do not use with alcohol Elavil does have a tendency to turn urine a bluish-green Give with meals to reduce nausea Give with meals
Antidepressant (miscellaneous)		Prozac (fluoxetine hydrochloride) 20 mg daily	No	Headache Excitement Insomnia Anxiety Nausea Rash	

IV. Drugs That Control Seizure Activity (anticonvulsants)

Convulsions are involuntary (uncontrollable) contractions of the voluntary muscles, which are the large muscles. Convulsions or seizures may be caused by brain damage, high fever, or for unknown reasons as in epilepsy. The diagnosis of the cause of the convulsive disorder or the type of epilepsy aids the physician in ordering the correct drug.

Convulsions vary from a twitch to severe tremors of all parts of the body. These variations have been classified as:

1. Simple partial - where only one area may shake. The person may speak foolishly or have unusual sense perceptions.

2. Complex partial - person may be motionless or move automatically but not appropriately. Person does not remember.

3. Generalized seizures formerly called grand mal - intense rigid body movement followed by jerky movements. Tongue is sometimes chewed and person may be incontinent.

Anticonvulsants drugs prevent or relieve the severity of convulsions. They act by blocking the nerves that cause the seizures or by an overall depression of central nervous system activity.

Anticonvulsant drugs may be given alone or in combination with other anticonvulsant drugs. The goal of the therapy is to control seizures and often several drugs must be tried before the most effective drug for the individual resident is found. It is important for health personnel working with residents who have seizures to observe for effects and side effects of this group of drugs. It is also important to closely observe and report any seizures the resident has. The reporting of time, length and resident's condition during a seizure helps the doctor select the right drug.

Side effects of anticonvulsants can be serious. The most common ones are effects on the central nervous system. These include confusion, slurred speech, dizziness, insomnia, headache and drowsiness. Some of the drugs affect the formation of blood cells. A skin rash occurs with some of the drugs.

Even when seizures are well controlled, the medication must always be given. Residents on anticonvulsant drugs must take <u>all</u> their medication at <u>all</u> times ordered. If the drug is not taken, the resident is more likely to have a seizure. As a medication manager you must immediately report any dosage that is missed. Anticonvulsant drugs are never abruptly discontinued because rapid withdrawal will also cause seizures.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Anticonvulsants (drugs that prevent or relieve seizures) The type of seizure helps determine the type of drug ordered Drug therapy for convulsions must be individualized Drugs must be withdrawn slowly	Central Nervous System	Phenobarbital (see sedatives/barbiturates)	Yes Schedule IV		
	Barbiturate used primarily for generalized seizures	Mebaral (mephobarbital) 100-200 mg tid Oral	Yes Schedule IV	Drowsiness Dizziness	
	Dilantin helps control all types of seizures	Dilantin (phenytoin sodium) 100 mg tid Oral, I.M.	No	Drowsiness Back and forth eye movement Swollen gums Staggering walk Dizziness Nausea Rash	Give with or after meals Avoid alcohol Good oral hygiene to prevent gum infection
	Mysoline used for generalized seizures and psychomotor malfunction	Mysoline (primidone) 250 mg daily Oral May be combined with other anticonvulsants	Yes Schedule IV	Drowsiness Staggering walk Headache Makes resident more irritable	
	Used with phenobarbital in generalized seizures	Tridione (trimethadione) 300-600 mg tid or qid Children - 300 mg tid Oral	No	Headache Drowsiness Nausea Vomiting Blurred vision Rash	Report a rash immediately Do not use with liver or kidney disease
	Used in partial seizures	Depakene (valproic acid) 250-1500 mg daily in divided dosages	No	Drowsiness Nauseau Vomiting Weakness Hair loss	Do not give with liver disease
	Used when other drugs are not effective	Tegretol (carbamazepine) 200-400 mg bid or qid Oral	No	Drowsiness Dizziness Blurred vision	Routine blood counts Do not use with MAO Inhibitors
		Zarontin (ethosuximide) 200-250 mg bid	No	Low b.p. Dry mouth Nausea Rash	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Anticonvulsants (continued)		Celontin (methsuximide) 300-900 mg daily	No	Drowsiness Ataxia Dizziness	
		Klonopin (clonazepam) 0.5-2 mg tid	No	Drowsiness Low b.p. Blurred visions	

V. Drugs That Affect the Musculoskeletal System

MUSCULAR SYSTEM

Functions of Musculoskeletal System
Protection of body
Posture
Movement of body
Production of heat (muscles)
Red blood cell production (bone marrow)
Store calcium (bone)

Types of Muscles
Skeletal - cover body voluntary--moves body
Smooth - involuntary blood vessels. G.I. tract, eye pupil
Cardiac - heart is a muscle

Drug Families

Analgesics	Corticosteroids
Anti-inflammatories	Anti-Parkison's
Anti-gout	Antispasmodics

Related Health Problems
Parkinsons Disease
Cerebral palsy
Muscular dystrophy
Related diseases of other systems

The musculoskeletal system consists of the bones, joints and muscles of the body. The bones provide the framework for the body shape, produce blood cells and store calcium and fat. The joints are the areas where bones join together (knee, elbow). There are three types of muscles. The skeletal muscles attach to the bones and with the bones provide voluntary body movement. The smooth muscles line the G.I. system, urinary tract and blood vessels and are involuntary. The cardiac muscle makes up the heart.

The activity of all types of muscles is coordinated by the nervous system. The nervous system sends messages to both voluntary and involuntary muscles that creates the required movement. Voluntary muscle action is caused by a willful act. Running, walking, smiling are examples of voluntary muscle action. Involuntary muscle action occurs without willful control. The heart beat, peristalsis (movement of food throughout digestive system), dilation or constriction of blood vessels are examples of involuntary muscle actions.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antiparkinson Relieve muscle tremors	Relieves muscle spasms Useful for side effects from some of the major tranquilizers Useful for relieving parkinson symptoms	Cogentin (benztropine meslyate) .5-6 mg daily	No	Nauseau Vomiting Blurred vision Palpitation Drowsiness May also cause muscle weakness May also cause restlessness	Give after meals if resident is nauseated
		Akineton (biperiden HCL and lactate) 2 mg tid or qid	No		
		Artane (trihexyphenidyl hycrochloride) 2-5 mg tid	No		
Muscle Relaxant	Centrally acting muscle relaxant	Robaxin (methocarbamol) 15 mg per kg wt	No	Dizziness Drowsiness Rash Low b.p.	
		Midol As directed on label	No	Drowsiness	
	Baclofen useful in M.S.	Baclofen (lioresal) up to 20 mg tid	No	Drowsiness Dizziness Low b.p. Nausea	Withdraw drug slowly

VI. Drugs That Affect the Respiratory System

The respiratory system consists of the nose, mouth, trachea (windpipe) and bronchi. These organs are lined with mucous membrane which secretes mucus when it is irritated.

The functions of the respiratory system are: 1) take in air, separate the oxygen from the air, which is then mixed with the blood to maintain cell life; and 2) remove waste products from the cells, such as carbon dioxide, and then remove these products from the body. The air exchange is done in small sac-like structures in the lungs called alveoli.

Allergic reactions affect the respiratory system. The most severe of these reactions is known as asthma. In asthma the bronchi become tense and spasms occur. Medications must be given to relax the bronchi and open the airway.

Prolonged trauma, diseases or infections of the respiratory system may lead to permanent damage to the alveoli preventing efficient gas exchange to take place. This chronic lung condition is known as emphysema.

When the passageways or lungs are irritated by foreign particles or excessive mucus is formed, the passages become partially blocked and coughing occurs in an attempt to clear the passages of the blocking material. Coughing is a reflex that helps the resident maintain an open airway and is a common symptom of respiratory diseases. There are many medications on the market to relieve coughs and many are ordered on a PRN basis. You should realize there are also some common nursing procedures that should be used in an attempt to relieve the cough. These measures are:

1. adequate fluid intake.
2. maintenance of a clean environment free of air contaminants, and
3. limitations in talking and smoking.

The following drug families are used in the treatment of respiratory diseases.

A. Antihistamines - These drugs dry up mucus secretions thus reducing symptoms associated with runny nose and cough. The antihistamines are also useful for nasal congestion and cough associated with allergic reactions. Side effects include dry mouth, drowsiness, and confusion. These drugs should not be given with other CNS depressants.

B. Antispasmodics/Bronchodilators - In allergic conditions, such as asthma, the bronchi often become tense and inflamed and it is difficult for persons with this condition to get air to and from the lungs. Bronchodilators enlarge and relax the bronchi to better allow air to be inhaled and exhaled. Side effects include rapid pulse and restlessness.

C. Antitussive - This group of drugs depresses the cough center in the brain, reducing the cough reflex. Codeine, which is also a narcotic analgesic, is especially effective. Remember, narcotics are controlled substances. Side effects include skin rash, chills, dizziness and drowsiness. See nervous system.

D. Decongestants - These drugs relieve congestion by shrinking mucous membranes. They promote drainage, especially of sinuses. Side effects include insomnia, swelling and inflammation of the nose, and high blood pressure. In addition to being decongestants, many also act as vasoconstrictors.

E. Expectorants - These drugs allow secretions in the bronchioles to be coughed up and out by liquefying the secretions. Many expectorants should be given with water and residents receiving these drugs should also be encouraged to drink plenty of fluids. Side effects include nausea and skin reaction.

The drugs that affect the respiratory system are administered in several ways. They are given orally and they are given through inhalation.. Often persons with chronic respiratory problems will be given these medications both methods. Persons taking drugs by inhalation must use the inhaler correctly or they will not be receiving an accurate dosage. Review rules of administering medications by inhalation.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Drugs that relieve cough, allergic reactions	Nervous system Respiratory	Chlor-Trimeton (chlorpheniramine maleate) 2-4 mg tid Oral, I.M.	No	Sedation Dizziness Fatigue Tremors	Do not give with asthma, glaucoma
Antihistamines	Decreases formation of secretions (useful in allergies) Benadryl is often given to counteract allergic symptoms of other drugs Dimetapp also good for sinus problems Several of these drugs (Dimetapp) are also useful as antiemetics	Benadryl (diphenhydramine) 25-50 mg qid	No	Confusion	
		Trinalin one tablet bid	No		
		Actifed (triprolidine HCL) 10 cc three times/day	No		
		Dimetapp (combination) 1-2 tsp qid	No		
		Drixoral (dexbrompheniramine) 2-6 mg bid	No		
		Tavist (clemastine fumarate) 1.34 mg tid	No	Drowsiness	Do not give in children under 12
		Rynatan 25 mg q 12 hr	No		
		Seldane (terfenadine) 60 mg q 8-12 hrs	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Drugs that relieve cough Bronchodilators Antispasmodics Antiasthma	Nervous system Respiratory system Relaxes smooth muscles decreasing bronchial spasms--especially effective in asthma Slo-Bid is long lasting theophylline	Theo-Dur, Slo-Phyllin, Bronkodyl, Somophyllin, Slo-Bid (theophylline) 200-250 mg q 6 hrs	No	Nausea and vomiting Irritability Insomnia Palpitation Headache Dizziness in elderly	Give after meals Give on time Must maintain blood levels
		(aminophylline) 200-300 mg q 6 hrs Oral, suppository	No		
		Lufyllin (dyphylline) 200 mg tid - relaxes smooth muscles	No		
		Brethine (terbutaline) 2.5-5 mg tid Inhalation also	No	Less common than above drugs but can cause palpitation dizziness insomnia	Do not give to children under 12 Do not use more more than every 4 hours
		Bronkosol (iseotharine) 1-2 inhalations q 4 hrs Spray	No		
	Proventil repetabs are extended release	Proventil or Ventolin (albuterol) Inhalation as ordered Oral syrup or tablets	No	Anxiety	
		Intal (cromolyn sodium) Inhalation Capsules oral	No	Bronchospasm Cough Dizziness Headache	
		Vancenase (beclomethasone dipropionate) Inhalation aerosol or nasal spray	No	Fungus infections of mouth	
		Flunisolide (aerobid) Inhalation or spray	No	Hoarseness Coughing Dry mouth	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Drugs that relieve cough	Nervous system	Codeine (see narcotic analgesics) often found combined with other drugs	Yes		
Antitussive	Respiratory system Depress cough center in brain and decrease cough reflex	Tessalon (benzonatate) 100 mg tid Oral	No	Drowsiness Dizziness Headache	Should be swallowed whole
		Pertussin, Romilar (dextromethorphan) 10-20 mg q 4 hrs	No	Dizziness G.I. distress Drowsiness	Do not give with MOA inhibitors Do not dilute
		Robitussin (glyceryl guaiacolate) 1-2 tsp q 3-4 hrs	No	G.I. upset Nausea Drowsiness	
		Tussin P.M. 1-2 tsp at bedtime	No	Drowsiness	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Decongestants	Mucous membranes Dry up secretions	epinephrine hydrochloride 1-2 drops in each nostril q 4-6 hours as needed	No	Stinging Burning Dryness of mucosa Headache Nausea	Use with cautions on residents with high blood pressure These should not be used over a long period of time
		Neo-Synephrine (phenylephrine hydrochloride) .25-1% solution drops as needed	No		
		Sudafed (pseudoephedrine) 60 mg q 4 hrs Oral	No		
		Allerest, Dimetane, Naldecon (phenylpropanolamine) 12.5-25 mg q 3-4 hrs	No		
		Isoclor timsules (chlorpheniramine) Liquid and tablets	No		
		Nyquil (dextromethorphan) Follow label directions	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Drugs that relieve cough	Respiratory system	(terpin hydrate) stimulant 5-10 cc 3 q 3-4 hrs Oral	Yes if with codeine Schedule V	Epigastric pain	Do not follow with water
Expectorants	Increases liquidation of mucous thereby assisting resident to cough up mucus.	Ammonium chloride 300 mg q 2-4 hrs Enteric coated tablets	No	G.I. irrtation Nausea Drowsiness	Adminsiter with full glass of water Do not give with milk
	There are basically two types of expectorants. One type is a stimulant and the other is a sedative	SSKI (potassium iodide) 300-650 mg q 4-6 hrs Drops, tablets	No	G.I. distress Skin rash Fever Sore throat	Do not give with thyroid diseases Dilute with water--encourage fluids
	Many of these are used in combination with other drugs that relieve cough				

VII. Drugs That Affect the Circulatory System

The circulatory system consists of the heart, blood vessels (veins and arteries) and the blood.

The blood is the fluid that maintains cell life, it carries all essential elements, nutrients and oxygen to feed and nourish each body cell. Without circulation of blood, our cells would soon die. In addition, blood carries waste products away from each cell by circulating through the body organs to remove wastes.

The vessels that carry the blood are called arteries, veins and capillaries. The pump that provides the force to circulate the blood is the heart. Arteries are the vessels going away from the heart, veins lead toward the heart and capillaries are the bridge between the two. Capillaries surround the cells and it is in the capillaries that the exchanges are made.

Several physiological problems may occur in the circulatory system that are treated by drugs. The heart may become diseased or aged (congestive heart failure) and not be able to effectively pump the blood. Drugs used to treat congestive heart failure include:

Cardiotonics - drugs that slow and strengthen the heart beat. Many of these drugs are digitalis preparations. Digitalis is a substance that may not be excreted immediately and a build-up may occur (cumulative effect). The cumulation may cause dangerous toxic effects. A major symptom of accumulation is: the change in heart rate--generally the pulse becomes very slow, below 60/minute. In some cases, however, the pulse may become rapid and irregular. Because of this symptom it is necessary to always take the resident's apical or radial pulse before giving a cardiotonic. The apical pulse is taken by placing a stethoscope over the apex of the heart and counting the beats for one (1) full minute. (If you have not been taught how to take an apical pulse you will be before completing this course.) If there is a change in pulse, the medication must not be given until the medication manager checks with the charge nurse or if in a residential facility with the pharmacist or physician. Other symptoms beside bradycardia of toxic affects of cardiotonics are fatigue, weakness, anorexia, nausea, mental depression and visual disturbances.

Cardiotonics are a group of drugs in which the initial dosage may be higher than the maintenance dosage. The process of building the digitalis level is sometimes called "digitalizing."

When residents have congestive heart failure the heart cannot effectively do its work and fluid accumulates in the body (lungs and cells). This body fluid is called edema. One group of drugs, the diuretics, assist the body in getting rid of this body fluid.

Diuretics - Drugs that relieve edema by increasing urinary output. Diuretics are often given with cardiotonics to treat congestive heart failure. Many diuretics are also useful as antihypertensive drugs. Diuretics can cause an electrolyte imbalance. The symptoms are muscle weakness, cramps, irregular heart beat, low blood pressure, apathy, anorexia and thirst. These symptoms should be reported immediately to the supervisor, pharmacists, or physician. Often potassium supplements

are given to prevent these side effects. Residents taking diuretics should have daily weights, be on intake and output, and have blood pressure taken regularly. Residents are also sometimes on a restricted salt diet.

The rhythm of the heart is controlled by a complex feedback mechanism from the nervous system. If there is heart damage in the area where the nerve nodes lie, the rhythm of the heart becomes disturbed.

Antiarrhythmics - Drugs that assist in correcting irregularities in heart rhythm. Common side effects with these are drowsiness, dizziness, lightheadedness, apprehension and low blood pressure.

Blood vessels assist in controlling the amount of blood by dilating (become larger) or constricting (becoming smaller). In some diseases or with aging, vessels sometimes loose their elasticity. In addition, there may be particles of other substances or the blood itself may form abnormal clots and these will fill the vessels blocking the passage of blood. When the heart has trouble getting blood through the system, the heart increases its force of beat, thus increasing the blood pressure. If blood flow is decreased too much, body cells may die because of the lack of oxygen.

Peripheral Vasodilators - Drugs that relax and dilate blood vessels throughout the body. Many are also smooth muscle antispasmodics. These drugs are useful in treating circulatory problems in extremities and increasing circulation to the brain. A common side effect is flushing and heart palpitations.

Coronary Vasodilators - Drugs that dilate blood vessels, especially in the heart, increasing blood flow and relieving heart pain (angina). Nitroglycerin, one of the more common of this group, is given sublingually or with a transdermal patch. If given sublingually the action occurs very rapidly. Side effects include headache, dizziness, hypotension and palpitation.

Vasconstrictors or Hypertensives - Drugs that constrict the blood vessels and by so doing, raise the blood pressure.

The force of the heart beat causes pressure within the blood vessels. When the vessels are diseased (antheriosclerosis) the heart often needs to increase pressure to force the blood through vessels. This causes high blood pressure or hypertension. Drugs that treat this are known as antihypertensives or hypotensive drugs.

Antihypertensive - Drugs that lower blood pressure and are used for long term treatment of hypertension. Some tranquilizers and diuretics are useful antihypertensives. The initial and maintenance dosages of antihypertensive drugs vary. It is important to continue the drugs even when blood pressure is normal. These drugs should also be slowly withdrawn to prevent blood pressure from rising rapidly. Residents on antihypertensives should have their blood pressure taken at least once a day. Common side effects are nasal stuffiness, drowsiness, nausea and vomiting. Over-the-counter cold medications are contraindicated with many of these drugs.

The blood, circulates throughout the system and maintains cellular life, carries nutrients, clotting ingredients, oxygen and waste products. When the composition of the blood is abnormal, drugs are given to help correct the condition.

Iron Preparation - Iron supplements. Iron is necessary for the formation of hemoglobin, a protein in blood that helps carry oxygen. When residents have low hemoglobin, iron is given. Iron preparations often cause nausea, so should be given with food. Iron will also turn stools black and tarry looking. Since many people associate dark, tarry stools with G.I. bleeding, the resident should be warned about this effect.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Cardiotonics	Cardiovascular system Slows and strengthens heart beat--useful in congestive heart conditions	Digifortis (digitalis)	No	See special precautions	These drugs have a cumulative effect Watch for signs of toxicity, anorexia, nausea and vomiting, diarrrhea, cramps, blurred vission, head-ache, muscle weakness, change in pulse rate. Always take pulse before giving. If below 60 or great change, do not give drug and notify spervisor
		Lanoxin (digoxin) 2-3 mg in divided doses (digitalizing) .5-.75 mg daily (maintenance)	No		
		Crystodigin (digitoxin) 200 mcg bid x 4 days (digitalizing) 50-300 mcg daily (maintenance)	No		
		Gitaligin (gitalin) 750 mcg q 6 hrs (digitalizing) 250 mcg - 126 mg daily (main-tenance)	No		
		Cedilanid (lanatoside) 8-10 mg daily (digitalizing) 1.5 mg daily (maintenance)			

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Diuretics	Cardiovascular system Urinary system Diuril, Enduron, and Hydrodiuril are also antihypertensive drugs	Diuril (chlorothiazide) .5-1 Gm od bid	No	Dizziness Headache	Do not give with kidney disease All diuretics can cause electrolyte imbalance. Symptoms are muscle cramps, muscle weakness, irregular heart beat, low b.p., apathy, anorexia vomiting, thirst and shallow respirations. All are contra-indicated with decreased urine output. Encourage resident to eat foods high in potassium (orange juice, other citrus, bananas, raisins milk, chicken, raw carrots,
		Hydrodiuril - Esidrex - Oretic (hydrochlorothiazide) 25-300 mg od	No	Low b.p. Anorexia Nausea and vomiting	
		Edecrin (ethacrynic acid) 50-200 mg daily	No No	Blurred vision	
		Lasix (furosemide) 20-80 mg per day	No	Abdominal dis-comfort	
		Aldactone (spironolactone) 25-200 mg daily divided	No	Drowsiness Confusion Breast tender-ness	
		Enduron (methyclothiazide) 2.5-10 mg daily Oral	No	Gastric irritation Dizziness Headache	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antiarrhythmics	Cardiovascular nervous system Depresses heart excitability and makes beat regular. Quinidex extentabs and Quinaglute are prolonged release preparations of quinidine.	Quinidex Extentabs/ Quinaglute (quinidine sulfate) 200-300 mg tid	No	Diarrhea Nausea Vomiting Restlessness Low b.p. Ear ringing	I and O. Watch b.p. Give with food Restrict caffeine and and alcohol
		Pronestyl (procainamide hydrochloride) 50 mg/kg/q 3 hrs Oral, I.V.	No	Hypotension Flushing Anorexia Nausea	Give with food Tell resident to avoid cold drinks and caffeine
		Inderal (propranolol) 10-30 mg 3-4 times daily Also useful for high B.P. and angina	No	Slows pulse Low b.p. Nausea Dizziness	Administer before meals I & O

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antihypertensives or Hypotensives	Cardiovascular system Lowers blood pressure Many of these drugs are combined with diuretics	Tenormin (atenolol) 50 mg daily	No	Blurred vision Low b.p. Nausea Vomiting	Tell resident to get up slowly to prevent dizziness.
		Eutonyl (pargyline HCL) 25 mg OD (initial) increase by 10 mg per week to a maximum of 200 mg daily		Dizziness Weakness Low b.p. Constipation Blurred vision	Discontinue drug slowly. May be potentiated by alcohol
		Vasotec (enalapril) 5-10 mg daily		Palpitations Nausea Vomiting Insomnia	Check b.p. before giving.
		Raudixin (rauwolfia) 200-400 mg daily initial 50-300 mg maintenance	No	Drowsiness Nasal congestion	May cause depression Check resident for rapid weight gain. Give with milk or food to prevent nausea

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Coagulants	Cardiovascular Blood Assist in clotting	Vitamin K - See vitamins			
Anticoagulants	Cardiovascular (blood) Prevents clots from forming or becoming larger	Coumadin (warfarin potassium) 2-10 mg daily - dosages individualized after prothrombin time	No	Anorexia Vomiting Bleeding Rash	Dangerous drug Caution resident to be careful not to bruise or cut self. Pro time must be done regularly Diet low in fat No aspirin
		(dicumarol) 25-200 mg daily - dosages individualized after prothrombin time	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Iron Preparation Hemantinics	Cardiovascular system	(ferrous sulfate) $FeSO_4$ 300 mg - 1.2 Gm daily	No	Nauseau Anorexia Constipation	Give with meals Advise resident stools will turn dark
		Vitamin B_{12} - see vitamins			

VIII. Drugs Used to Fight Infection

Many diseases are caused by the invasion of micro-organisms. There are several drugs that will kill or stop the growth of some micro-organisms. Many of these drugs are only effective when there is the right concentration of the drug in the blood (blood levels). When this concentration is too low, bacteria will continue to grow. These drugs must be given on time, generally every 4 to 6 hours. Residents must be awakened to take these drugs in order to maintain the desired blood level. These drugs must be given for the total time ordered. The infection will recur if antibiotics are discontinued too soon.

A. Antibiotics - Drugs that kill or slow the growth of some micro-organisms. There are two subdivisions:
   1. Broad spectrum - those antibiotics useful against a wide variety of bacteria, and
   2. Specific action - those antibiotics that are effective on selected microbes.

   Allergic reactions, such as rashes, may occur with antibiotic therapy and these allergic reactions can lead to a condition called Anaphylactic Shock. This is a very severe allergic reaction which may lead to death. The antibiotic penicillin has been known to cause this severe reaction. Since anaphylactic shock occurs rapidly and is so dangerous, it is necessary to check drug allergies of residents before giving the initial dose of antibiotics. In addition, if a resident receiving antibiotic therapy complains of any allergic symptoms, you must hold the medication and check with charge nurse or if in a residential facility, the physician, prior to giving any additional dose.

   Before prescribing an antibiotic, the physician may order a culture and sensitivity test. This laboratory test identifies which antibiotics would be most useful in killing the bacteria causing the infection.

   The most common side effects seen with antibiotic therapy are gastrointestinal upsets and diarrhea. Normally bacteria are found in the large bowel. These bacteria assist in digestion and when destroyed by the antibiotic, diarrhea results.

   Food interferes with the absorption of many antibiotics, so to be most effective, antibiotics should be given 1-2 hours before or 2-3 hours after meals.

   Superinfection or the development of a secondary infection is a possibility with antibiotic drugs. It is most likely to occur when the antibiotics are given for a long period of time.

   It is common for adolescents to have problems with acne. Broad, spectrum antibiotics are often ordered to prevent or cure these problems. The drug is not given in as large a dosage or as frequently and it is given over a longer period of time.

B. Cephalosporins - are a form of antibiotic which resemble penicillin. These drugs are reserved for serious infections. They too cause allergic reactions.

D. Tuberculostatic - Drugs used in the treatment of tuberculosis. These drugs inhibit the growth of the tuberculin bacilli that causes tuberculosis. Many of the drugs are antibiotics.

E. Sulfonamides - These sulfa drugs are useful in preventing the growth of many bacteria. The sulfas are most effective when the blood level is maintained. The initial dosage of sulfa drugs is higher than the maintenance dosage. Most sulfonamides are excreted by the kidneys. In order to prevent kidney damage from crystals formed by these drugs, the resident receiving sulfa drugs must drink large amounts of water. Allergic reactions include skin rash and hives.

F. Antifungal - Some fungus cause diseases such as ringworm, athletes' foot, etc. These diseases usually develop slowly and, although resistant to treatment, their growth can be inhibited or they may be killed by antifungal drugs.

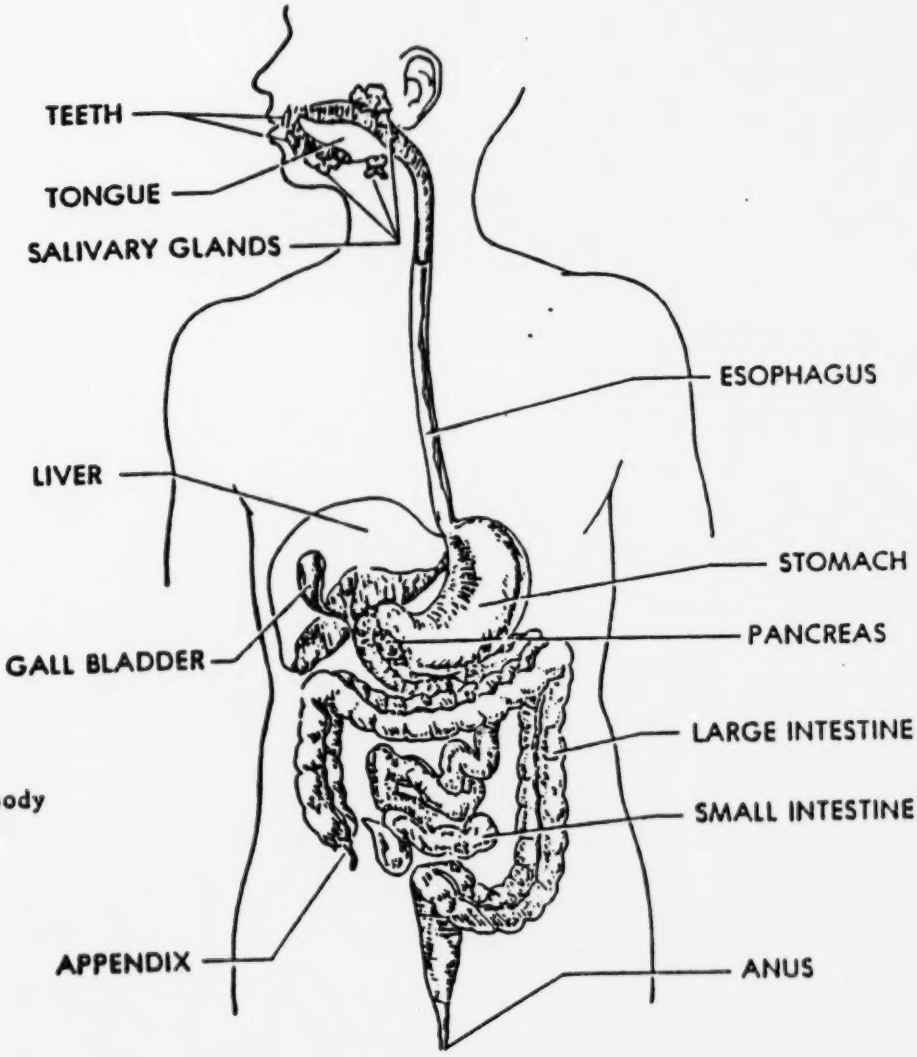
Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antibiotics	Inhibit the growth or kill bacteria To treat infections Tetracycline is ofted used in acne treatment	Ampicillin (penicillin) 250-500 mg q 6 hrs Oral, I.M. (broad spectrum)	No	Nauseau Vomiting Diarrhea Rash	Give on empty stomach Be sure not allergic
		Achromycin, Tetracyn, Tetrex, Sumycin (tetracyline) 250 mg q 6 hrs Oral, I.M.	No	Nausea Vomiting Diarrhea	Give 2 hours before meals Do not give with antacids or mild products
		Keflex (cephalexin mono-hydrate) 250-500 mg q 6 hrs Oral, I.M. (respiratory and skin infection)	No	Diarrhea Nausea Vomiting Headache	Continue at least 48 hours after symptoms disappear Food delays absorption
		(bacitracin) Topical 2-3 times daily Eye ointment I.M.	No	Anorexia Nausea Vomiting Diarrhea (given I.M.)	
		Mycinquent (neomycin) 1 Gm q 4 hrs Oral, ointment Eye ointment 0.5% Ear drops 5m/ml	No	Mild laxative effect Nausea Vomiting Tinnitus	Do not give oral medication with bowel obstruction
		Ilosone (erythromycin estolate) 250 mg q 6 hrs Oral, suspensions	No	Vomiting Diarrhea Allergic reaction	Give with full glass of water on empty stomach
		Terramycin (oxytetracycline) 250-500 mg tid	No		
		Cleocin (clindamycin) 150-450 mg q 6 hrs	No	Nausea Diarrhea Rash	Give before or after meals
		Amoxil (amoxicillin) 250-500 mg q 8 hrs	No	Nausea Diarrhea	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antibiotics (continued)		Ceclor (cefaclor) 200-250 mg q 8 hrs	No	Diarrhea Nausea Vommiting Rashes	Food delaays absorption
		Duricef (cefadroxil mono-hydrate) 1000-2000 mg daily	No		
		Vibramycin (doxycycline ca) 100-200 mg daily	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Sulfonamides Antibacterials	To inhibit the growth of bacteria To treat infections	Gantrisin (sulfisoxazole) 2-4 Gms, divided in 3-6 doses Oral, I.M. May be higher--especially in urinary tract diseases	No	Headache Fever Chills Nausea Kidney damage	I & O Encourage fluids Initial dosages may be higher to build up serum levels
		Microsulfon (sulfadiazine) 2-4 Gm in 3 divided dosages Oral, parenteral	No	Rash	
		Thiosulfil (sulfamethizole) 500-1000 mg q 6 hrs	No		
		Bactrim (trimethoprim-sulfamethoxazole) 160-800 mg bid Oral, suspension	No	Glossitis Stomatitis Headache Rash	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antifungal	Inhibits the growth of fungus	Fungizone (amphotericin) I.V. or topical in 3% cream	No	Topical-dry skin Burning sensation	
		Fulvicin (griseofulvin) 250-500 mg per day Oral	No	Headache Insomnia Rash	
		Mycostatin (nystatin) 500,000 U tid Oral, vaginal tablets, topical creams	No	Usually mild nausea Vomiting Diarrhea	Used portion destroyed after 7 days at room temp; after 10 days if stored in refrigerator
		Tinactin, Zeasorb (tolnaftate) Cream 1%, aerosol 1% Apply small amount twice a day	No	None	Discontinue if irritation occurs
		Desenex (undecylenic acid and salts) Ointment, cream, soap Apply as needed	No	None	Do not use if skin is broken
		Lotrimin (clotrimazole) Apply to skin	No	Stinging Blistering	
		Nizoral (ketoconazole) Oral 200-400 mg daily Cream 25%	No	Nausea Vomiting Headache	
		Micatin (miconazole) comes in tablets, powders, aerosol solutions	No		Can cause hives Vulvovaginal symptoms when used in powder, aerosol

DIGESTIVE SYSTEM



Functions
Takes in food
Prepares food for body use (digestion)
Excretes waste

Related Health Problems
Ulcers of G.I. system
Indigestion
Colitis
Constipation
Anemia
Vitamin deficiency
Loss of appetite
Hiatal hernia
Diarrhea
Nausea and vomiting

Drug Families

Digestion
Antacids
Anticholinergics
Antiemetics
Antinauseants
Antispasmodics
Appetite Stimulants
Carminatives
Emetics

Nutrition and Growth
Appetite Stimulants and Depressants
Digestants
Hormones
Minerals
Vitamins

Bowel Activity
Antidiarrheals
Cathartics (laxatives)

IX. Drugs That Affect the Digestive System

The next drug families affect the digestive system. The digestive system includes teeth, tongue, throat, esophagus, stomach, large and small intestines. The digestion process cannot be completed without saliva, hydrochloric acid and enzymes to break down food into a substance which can be absorbed and utilized by the body.

The first step in digestion is chewing of the food and mixing it with the saliva. Some of the elderly residents and handicapped have poor teeth or chewing difficulties which interfere with this process.

The food then moves down the esophagus. An involuntary movement called peristalsis starts here and continues throughout the rest of the system to assist in moving the food through the system.

The stomach churns the food and mixes it with digestive juices. These juices soften and prepare food for further digestion. This process takes four to five hours. One of these juices is hydrochloric acid. Sometimes a person has too much hydrochloric acid and a condition called hyperacidity exists.

The small intestine is the longest part of the digestive system. The greatest part of the digestive process takes place here. In the small intestine other enzymes and bile are added to the food to complete digestion. Bile helps in fat digestion. It is produced by the liver and stored in the gall bladder to be released when there is fat in the small intestine to be digested. The other enzymes work on special types of food.

Absorption of the needed food elements from digestion is accomplished in the small intestines and carried by blood to the body cells.

The large intestine is the final organ of the digestive system. Here additional water is reabsorbed into the blood stream and waste products are excreted.

The most common complaints of the general public are related to the G.I. system. There are a variety of drugs, both over-the-counter and prescription, used to relieve and treat these symptoms.

A. Antacids - Drugs that neutralize acid in the stomach thus relieving burning, nauseated feeling. These drugs may cause constipation or diarrhea.

B. Anticholinergics - Drugs that inhibit stomach secretions and decrease gastric mobility. These drugs are also antispasmodics. Many are atropine-like in nature. Common side effects are blurred vision, light sensitiveness, urinary hesitancy, constipation, palpitations, flushing and dizziness.

C. Antispasmodics - Drugs that decrease peristalsis or spasms in the stomach. They work as muscle relaxants or by depressing the central nervous system. This group of drugs is often given a half hour before meals to be most effective. Side effects include dry mouth, dilated pupils and headache.

D. Antiemetics - Drugs that treat nausea and vomiting. Many are given by injection or suppository. The common side effects are drowsiness, blurred vision, hypotension and skin reactions. Some of the tranquilizers are useful as antiemetics.

E. Antinauseants - Drugs that prevent nausea, some of the antihistamines are also useful antinauseants. The common side effect is drowsiness.

F. Appetite Stimulants - Drugs that increase appetite. They have no known side effects.

G. Carminatives - Drugs that relieve gas in the G.I. tract. This group has very few side effects.

H. Emetics - Drugs that cause vomiting. These may be given when poisoning has occurred. They cause stomach irritation and vomiting.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antacids	G.I. system Lowers stomach acidity relieving heartburn, indigestion	Maalox (combination drug) 10 mg qid pc & h.s. Oral	No	Very few Some may cause constipation or diarrhea	Some are high in sodium These drugs can affect bowel elimination either by causing diarrhea or constipation. Read the label.
		Gelusil (combination) tab or 5 ml between meals	No		
		Amphojel (aluminum hydroxide)	No		
		Riopan (magaldrate) 400-800 mg 4 times a day	No		
		Gaviscon (combination) 80 mg oral	No		
		Mylanta As ordered on label	No		
		Milk of Magnesia Smaller doses than for laxative chewable tablets	No		
		Kolantyl gel As ordered on label	No		
		Pepcid (famotidine) 20 mg q 6 hrs	No	Constipation Dizziness Headache Rash	
Anti-ulcer	G.I. systemm Useful in ulcer conditions	Tagamet (cimetidine) 300 mg qid Oral	No	Dizziness Diarrhea Rash	Give with meals because that is when effect is needed
		Zantac (ranitidine hydrochloride) Syrup or tablets 150 mg bid	No	Constipation Nausea Headache	
		Axid (nizatidine) 150 mg bid	No	Rashing Itching Sweating	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Anticholingeric and/or Antispasmodics	Nervous system Muscle system General effects Eyes-dilate pupils Respiratory tract - dry secretions G.I. tract - decrease secretions and mobility Heart - increase rate Urinary - relax muscles of ureters	(atropine) many are derivatives .4 - .6 mg I.M., I.V. 250 mg orally - eye drops (tr. of belladonna) .5 - 1.0 mg q 12 hrs Oral Robinul (glycopyrrolate) 1-2 mg tid Pro-Banthine (propantheline bromide) 15 mg ac and h.s. Oral, I.M. (atropine like) Bentyl (dicyclomine hydrochloride) 10-20 mg tid Oral, I.M. Donnagel (belladonna prep) .5 - 1 mg q 12 hours Oral	No No No No No No	Dry mouth Flushed skin Urinary retention Tachycardia Constipation Blurred vision Drowsiness	Report change in urinary pattern

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Substance (Schedule)	Side Effects	Special Precautions
Antiemetics and Antinauseants	Central Nervous System G.I. System Decrease nausea and vomiting by depressing center in brain Many of these drugs are also antihistamines or tranquilizers	Dramamine (dimenhydrinate) 50-100 mg q 4 hrs Oral, rectal, I.M. This drug is also an antihistamine and antivertigo (useful for motion sickness)	No	Drowsiness Headache Blurred vision	
		Antivert (meclizine hydrochloride) 25-30 mg daily - also an antihistamine	No	Drowsiness Dry mouth Blurred vision	
		Tigan (trimethobenzamide hydrochloride 250 mg tid Oral, rectal, I.M.	No	Skin rash Low b.p. Blurred vision Drowsiness	Monitor b.p.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Carminatives	G.I. system	Peppermint Water	No	None	
	Increase G.I. motility and relieve gas	Mylicon - chewable tablets	No	Very few	
Emetics	Nervous system Stimulate vomiting center In smaller dosages is useful as an expectorant Nurse, supervisor, doctor or poison center should be contacted before ipecac syrup given.	(ipecac syrup) 8-15 ml Oral	No	Excessive vomiting	Do not use if substance swallowed caustic or resident is semi-conscious

X. Drugs That Affect Bowel Activity

There are two bowel problems that frequently affect residents: diarrhea and constipation.

A. Antidiarrheals - Drugs that decrease diarrhea. These drugs decrease peristalsis and decrease spasm of the large bowel.

B. Cathartics and Laxatives - Drugs that relieve constipation. Cathartics are divided into five main subclasses. These classes are determined by the method in which the drug works.

1. Irritants - Drugs that assist in bowel evacuation by irritating the bowel and increasing peristalsis. These drugs cause cramping. Cascara is a good example of this type.

2. Stool Softeners - Drugs that assist in bowel evacuation by softening the stool for easier passage. These drugs are useful in prevention of constipation.

3. Bulk Laxatives - Drugs that assist in bowel evacuation by adding bulk to the stool. Metamucil is a good example of this type of drug. Metamucil is a powder that should be mixed in water, the drug "sets" or becomes bulky very rapidly, so it must be mixed just prior to giving to the resident.

4. Saline Laxatives - Drugs that add fluid to the stool, making it easier to evacuate. Milk of Magnesia is a good example.

5. Lubricants - Drugs that help maintain soft stools by coating fecal material. Mineral oil is the best example of a lubricant laxative.

Cathartics should never be given if the resident is complaining of severe abdominal pain. This is a known contraindication.

Lubricant and stool softener cathartics may prevent the absorption of fat-soluable vitamins. These cathartics should be given on an empty stomach.

Care should also be taken to prevent a resident's dependence on laxatives. Good bowel habits should be taught, which include: 1) exercise, 2) good diet, 3) regular daily time for evacuation, 4) fluid, and 5) high fiber if approved by dietary department.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antidiarrheals	Nervous system G.I. system Slows down peristalsis thus decreasing or stopping diarrhea	Lomotil (diphenoxylate atropine) 5 mg 3-4 times daily Oral	Yes Schedule V	Nausea Vomiting Anorexia Dizziness Abdominal distention Blurred vision Dry mouth	Report abdominal distention
		Paregoric (camphorated tincture of opium)	Yes Schedule III	Constipation	Give with plenty of water
		Kaopectate	No		
		Pepto Bismol	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Cathartics (Laxatives) Irritant	G.I. system Irritant cathartics increase peristalsis Sometimes mixed with Milk of Magnesia or mineral oil	Castor oil 15-60 cc Oral	No	Nausea Vomiting Cramps	Do not give with abdominal pain, intestional obstruction or fecal impaction
		Dulcolax (bisacodyl) 2-6 tabs Oral or suppository	No		
		Senokot (senna concentrate) 10-15 ml at bedtime	No		
		(cascara sagrada) 325 mg at h.s.	No		
		Senna (senokot sennagen) As directed	No		
Cathartic (Laxative) Stool Softener	G.I. system Soften fecal impaction to allow for easier passage	Colace (dioctyl sodium sulfosuccinate) 50-200 mg Oral	No	Occasionally mild cramping	May mix with juice to disguise taste
		Dialose plus (casanthranol) 30-60 mg oral daily	No		
		Modane (danthron) 150 mg oral with evening meal	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Cathartic (Laxative) Bulk Increasers	G.I. system Helps by softening stools and stimulating peristalsis	Metamucil (psyllium hydrophilic muciloid) 1 teaspoon mixed with water 3 x a day	No		Mix at bedside or just before giving in water or juice
Cathartic Saline	G.I. system Increase amount of water in bowel, thus increasing peristalsis	Milk of Magnesia (magnesium hydroxide) small doses 5 cc antacid larger doses 30 cc laxative	No	Cramping	Do not give with abdominal pain, intestional obstruction or fecal impaction
		Fleets enema	No		
		Chronulac (lactulose) 15-30 ml per day syrup	No		
Cathartic Lubricant	G.I. system Lubricated for easier passage	(mineral oil) 1-2 Tbsp (15-30 ml) at bedtime	No	None	Give with juice Resident should be in an upright position when taking
		(olive oil)	No	None	
		DSS (docusate sodium) 240 mg daily	No		Do not give with meals Interferes with absorption of fat soluble

XI. Drugs That Affect Nutrition and Growth

Food products contain minerals and vitamins that are essential to growth and maintenance of health. Poor diet or certain conditions where minerals and vitamins are not utilized by the body cause diseases. These diseases are cured or prevented by supplements. These supplements should never be used in place of a balanced diet.

A. Appetite Stimulants and Depressants are drugs that affect the resident's desire for food.

B. Digestant Supplements - Drugs that assist in the breakdown of food to prepare the food for utilization by the body. These are usually replacements for substances normally produced by the body. Common digestant supplements are the enzymes. Digestant supplements must be administered at the prescribed time; for example bile is secreted and used for metabolism about one-half hour after food is eaten, thus bile supplement should be given one-half hour after resident eats to be most effective.

C. Vitamins - Essential constituents of food products that assist in body functions.

D. Minerals - Elements supplied in a balanced diet that maintain body functions. Examples are iron, calcium, etc. Minerals are also classified as essential electrolytes. The electrolytes are found in the cells and are essential to maintain cell life.

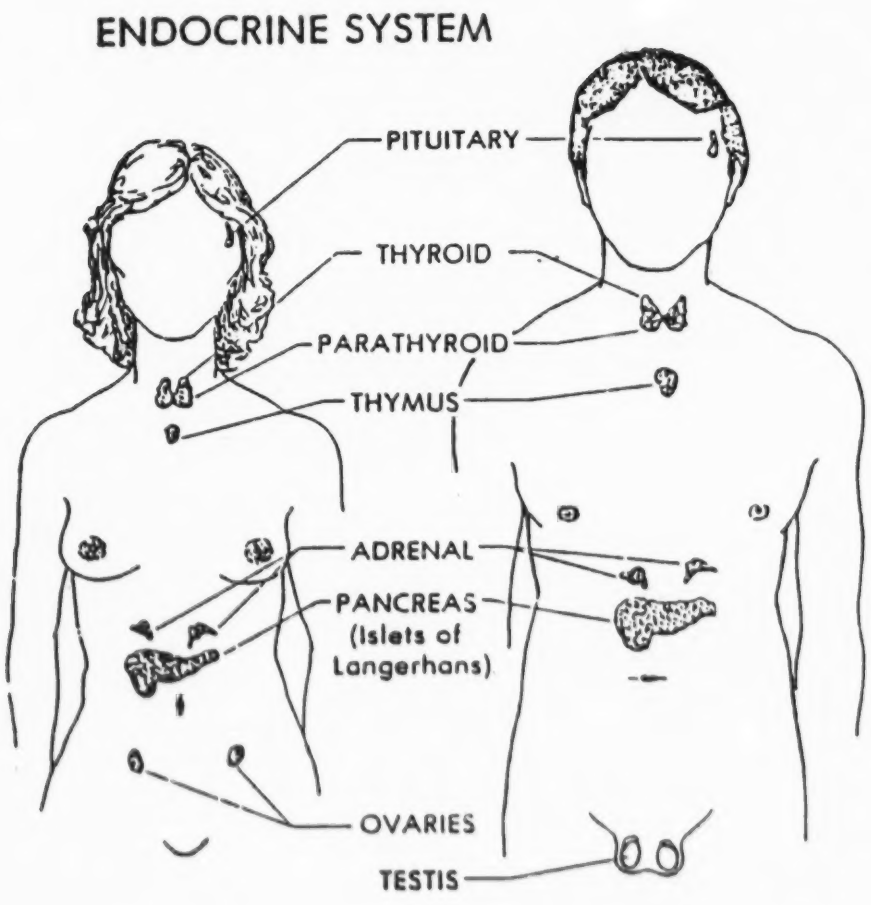
Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Appetite Depressant Also CNS stimulants (amphetamines) Not being used because of abuse	Central nervous system Decrease the desire for food	Dexedrine (dextroamphetamine sulfate) 2.5 - 10 mg tid	Yes Schedule II	Agitation Nausea Anorexia	Tolerance develops

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Vitamins Fat Soluble	See specific vitamin for diseases and systems Generally vitamins promote health of all cells and tissues	Vitamin A Prevents night blindness-helps with growth of bones and teeth Found naturally in eggs and liver, green vegetables and carrots	No	Overdose causes skin and bone lesions	Stored in body, can get over-dose
		Vitamin D prevents rickets and osteomalacia Found in milk, egg yolk, sun shine	No	Loss of calcium from bone	Should be not give to replace good diet
		Vitamin E Nothing specific found in wheat germ	No	None known	
		Vitamin K (assists in blood clotting)	No	None known	
		Multiple Vitamins/Minerals (supplements all vitamins) Read label carefully to determine daily requirements	No	None	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Vitamins Water Soluble	All body systems for normal growth	Ascorbic Acid (vitamin C) Prevent scurvy. Found in citrus fruits and vegetables Helps in development of teeth, bones, blood vessels Helps in wound healing	No	None known	Should not be given to replace good diet
		Thiamin (vitamin B) Prevent beriberi Aids in good neurological state Found in meats and whole grain	No	None known	
		Riboflavin (vitamin B_2) Deficiency causing tearing, burning eyes Found in milk, eggs, meat, green vegetables	No	None known	
		Pyridoxine (vitamin B_6) Aids in digestion Found in same foods as vitamin B_2	No	None known	
		Niacin, Nicotinic acid (vitamin B_3) Helps body cells	No	Flushed face and feeling of warmth	
		Pantothenic Acid (vitamin B) Helps with digestion	No	None known	
		Geritol, Unicap, Multivitamins combinations See label	No		
		Cyanocobalamin (vitamin B_{12}) I.M. or Oral	No		
		Folvite (folic acid) Niferex vitamin b complex 1 tablet daily	No		

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Minerals (electrolytes)	Most systems including individual body cells	(calcium) Oscal Nerve and muscle function, bone formation, clotting of blood Found in milk	No	Tetany-tremor	Calcium carbonate more easily absorbed
		K-Lyte, Kaon, Slow-K (potassium K) Helps in transmission of nerve impulses Can be given by I.M., I.V. as well as oral	No	Listlessness Mental confusion G.I. upset Low b.p.	
		Sodium (salt Na) Main electrolyte balance	No	Emeda	
		(iodine) Prevent goiter Added to table salt			
		Trinsicon (for blood with intrinsic factor) 1 pulvule bid combination	No	Rare--but can cause nausea	
		Iron - Fe - supplement usually in conjunction with other minerals/vitamins	No	Nausea Vomiting	Turns stools dark
Ammonia detoxicant (also laxative)	Causes decrease of ammonia for persons suffering from systemic encephalopathy	Lactulose (cephulac) 30-45 mg tid	No	Nausea Vomiting Diarrhea	

XII. Drugs That Affect the Endocrine System



Related Disorders
Diabetes Mellitus
Hypothyroidism
Goiter
Cancer
Hyperthyroidism
Symptoms of other diseases

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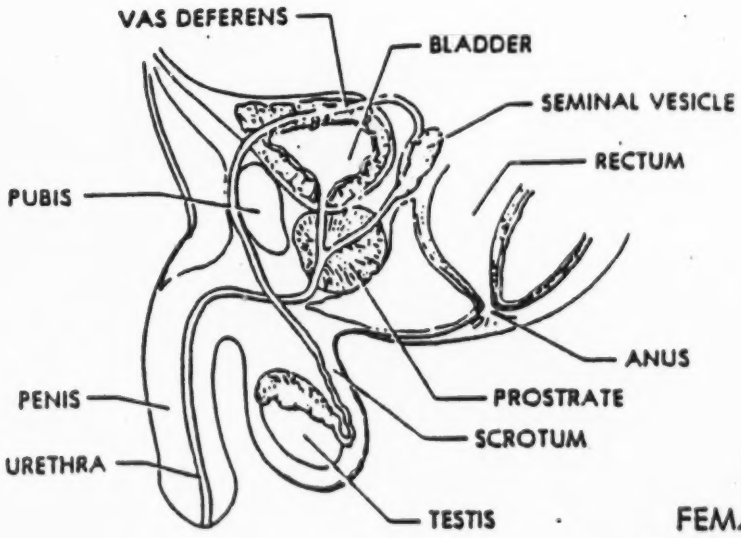
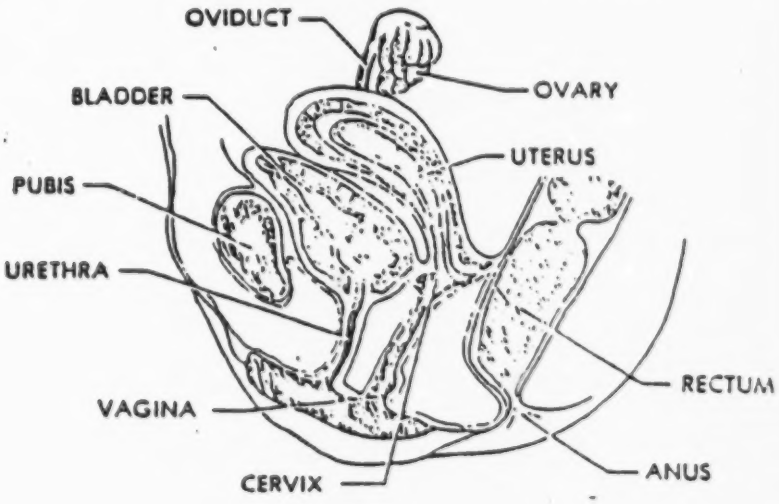
MALE REPRODUCTIVE SYSTEM



FEMALE REPRODUCTIVE SYSTEM

FUNCTION: REPRODUCES ORGANISMS LIKE ITSELF



Related Diseases
Cancer
Obstructions

Functions
Reproduction
Hormones

Gland	Hormone	Action
Ovary	Estrogen	Stimulates growth of primary sex organs (female)
	Progesterone	Prepares for fertilized ovum
Testes	Testosterone	Stimulates growth of primary sex organ (male)

XII. Drugs That Affect the Endocrine System (Hormones)

The Endocrine System consists of glands which produce hormones. Hormones control various body processes such as growth, food digestion, etc. Most of the hormones are secreted directly into the blood stream and are transported throughout the body in blood.

Gland	Major Secretion	Action
Pituitary	ACTH	Stimulates adrenal gland
	FH	Growth and ovarian gland
	ADH	Promotes water to be reabsorbed from kidney
Adrenal	Cortisol	Aids in food metabolism
	Aldosterone	Aids in regulating minerals
	Epinephrine	Increases Bp and heart, activates other cells
Pancreas	Insulin	Helps in sugar metabolism
	Glucagon	Maintains amount of glucose in blood
Parathyroids	Parathormone	Increases calcium
Thyroid	Thyrozine	Increases metabolism Influences physical and mental activity
Ovaries & Testes	Progesterone Estrogen Testosterone	Sex characteristics - reproduction

Hormones are given as replacement drugs or support agents to assist the body in handling stress.

Disorders of the Endocrine System

Disorders of the endocrine system can arise from overproduction of hormones (e.g., giantism) or underproduction of hormones (dwarfing). Disorders can be caused because of aging or degeneration of the gland, tumors of the gland, genetic or inborn causes or inaccurate stimulation of the gland. If you review the gland, hormone secretions and action, you can realize some of the symptoms of under or over production of certain hormones.

One of the most common endocrine diseases you will see is diabetes mellitus. This condition is caused when the pancreas does not secrete enough of the hormone insulin. Insulin assists in the metabolism of sugars. In digestion most foods are converted to simple sugar (glucose) to be used by the body for immediate energy or to be stored by the body for future use. Insulin is the agent that assists the glucose in the blood to be used or stored by the body cells. When there is not enough insulin, the glucose remains in the blood and cannot be used. It is normal to have glucose in the blood at all times; however, in diabetes there is too much glucose in the blood (hyperglycemia).

Insufficient insulin diabetes mellitus is treated by 1) replacement therapy (insulin injections), or 2) hypoglycemics (agents that stimulate pancreas cells to produce more insulin). The type of drug treatment depends on the type and severity of the diabetes.

The hormone insulin is destroyed by the gastric juices in the stomach when given orally, so all residents who require insulin will be given it by injection. The licensed nurse will be responsible for administering this medication; but you, as a medication manager, will assist the licensed nurse in observing the resident for reactions to the insulin.

Hypoglycemics are substances that lower blood sugar. Older persons who get diabetes can often be treated by hypoglycemics. These drugs stimulate the pancreas to release the insulin to metabolize the glucose.

Persons with diabetes must have a balance between the food eaten and insulin in blood stream or they become seriously ill. If there is not enough insulin, they have a condition known as hyperglycemia. If there is too much insulin, they have a condition known as hypoglycemia. Hypoglycemia must be treated immediately. The treatment is drinking a substance (orange juice, etc.) that is high in glucose or sugar. You must know the symptoms of both conditions when caring for a diabetic and report any symptoms immediately.

	Hyperglycemia Too much food, not enough insulin	Hypoglycemia Too little food, too much insulin
Onset	gradual	sudden
Skin	flushed - dry	pale - moist
Behavior	drowsy	excited
Breath	fruity odor	normal
Respiration	deep, labored	normal to rapid
Vomiting	yes	no
Tongue	dry	moist
Hunger	no	yes
Thirst	yes	no
Cause	insufficient insulin, infection, fever, eats too much, emotional stress	too much insulin, Nausea and vomiting late meals, lack of appetite, unusual amount of exercise

Watch and observe the diabetic residents closely. Note when and how much they eat. If for some reason they cannot eat, report it immediately and notify supervisor of any reactions.

Other Conditions and Related Drug Therapy

The two adrenal glands consist of two parts. The adrenal cortex and adrenal medulla. The adrenal medulla drugs are called adrenergic. These hormones stimulate the sympathetic nervous system causing the following body effects: 1) increase in heart rate, 2) raised blood pressure, 3) enlarged coronary and skeletal blood vessels, 4) relaxed respiratory smooth muscles, 5) slows G.I. activity, and 6) enlarged

pupils. These actions make the drug useful in treating the symptoms of many body disorders previously discussed such as heart conditions, asthma, and stomach hyperactivity. The adrenal cortex produces hormones classified as adrenocortoids or corticosteroids. Since the pituitary gland hormone stimulates production of the corticosteroids, they may be given as replacement when pituitary is not functioning.

Addison's disease is a condition that results when there is not enough hormone produced by the adrenal cartex. In addition to replacement hormone therapy, corticosteroids are useful in treating symptoms of other diseases and general body stress. They decrease inflammation, relieve allergy symptoms, raise blood pressure and blood volume. They are also useful after organ transplant surgery to prevent organ rejection (kidney transplant). In addition, corticosteroids are useful in relieving some symptoms associated with certain types of cancer.

An excess of the corticosteroids produces a condition called "Cushing's Syndrome." This can be a result of drug therapy. The symptoms are moon face, buffalo hump, weight gain, flushing, thinning hair and sweating. These symptoms should be reported.

Since these drugs are used in chronic conditions, they may be given over long periods of time. The body adjusts to them and they must be withdrawn very slowly over a period of time.

The thyroid gland produces a hormone that affects metabolism and physical and mental activity. The thyroid gland needs the mineral iodine to function properly. Inadequate amounts of iodine intake can produce a condition called simple goiter. If the thyroid gland produces too much hormone, the condition is called hyperthyroidism. The symptoms of hyperthyroidism are nervousness, sweating, warm moist skin, increased appetite and restlessness. Drugs used to treat the condition are known as antithyroid drugs. Iodine preparations should be given with these drugs. If the thyroid gland produces too little thyroid, the condition is call hypothyroidism. Replacement hormone therapy is used to treat the condition. The initial doses of the drugs are small and gradually increased.

Estrogen and Progestin are the hormones secreted by ovaries. Estrogen stimulates growth and development of female sex organs. Estrogen therapy is given to:

1. assist the woman through menopause as replacement therapy,
2. treat a disease known as osteoporosis (thinning of bones in elderly), and
3. to treat cancer of the male reproductive system.

Progestin is necessary in preparing the uterus for pregnancy. Both are used in birth control. Women with clotting problems, hypertension, and smokers should not be using these medications.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Hormones Insulin "Anti-diabetic"	Pancreas hormone replacement Blood sugar levels	Regular Insulin NPH Insulin Injection - units regulated by doctors. Only given by licensed nurse	No		Watch for insulin reaction. Report symptoms immediately. Check food intake.
Antidiuretic Hormone		DDAVP (desmopressin acetate) Intranasal 0.1 mg h.s.	No	Very few Headache Nausea	Useful in diabetics
Antidiabetic		Diabeta (glyburide) 2.5-5 mg daily Oral antidiabetic		Hypoglycemia	Give with breakfast or first meal
Hormones Adrenergic from Adrenal Medulla	Heart - increase blood vessles, dilates respiratory, dilates pupils, dries secretions	Adrenalin (epinephrine) I.M., inhalation, topical, ophthalmic	No	Weakness Dizziness Palpitations Nausea Pallor	
		Isuprel (isoproterenol) 30-180 mg in divided doses useful in brochospasms see respiratory	No	Nervousness Headache Palpitations	

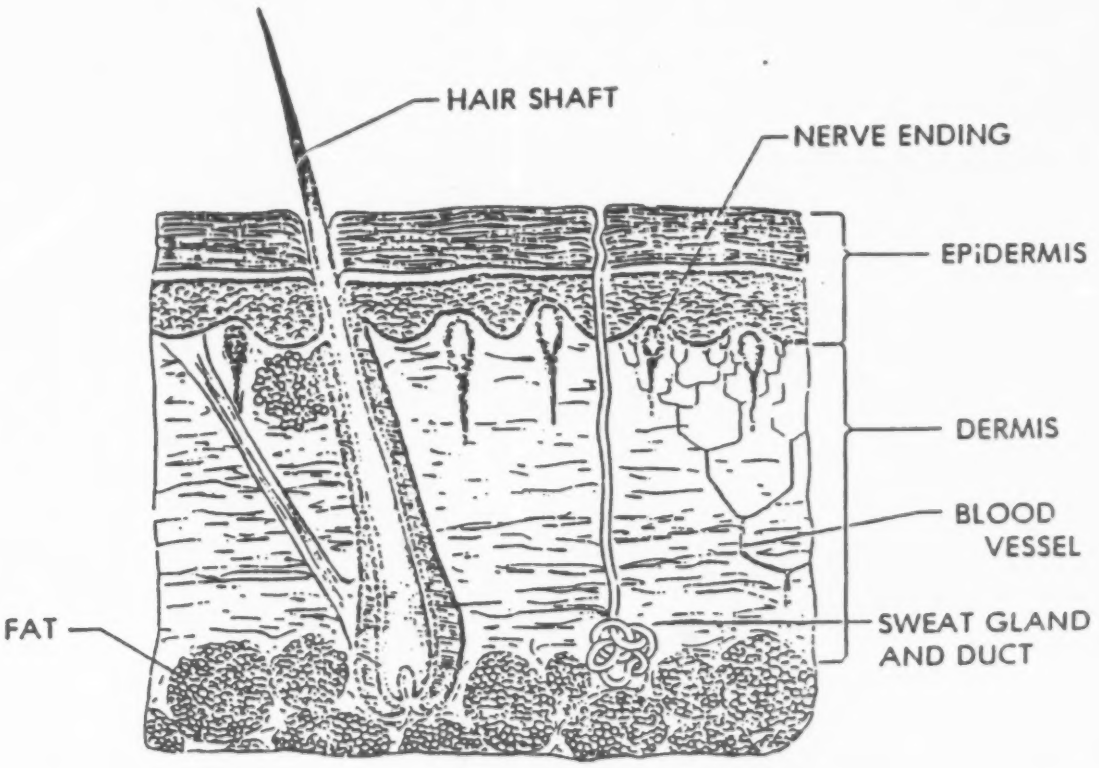
Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antihypoparathryoid	Supplements parathyroid Treats tetany	Dihydrotachysterol (DHT, hytakeral) .8-2.4 mg daily			
Hormones Corticosteroids for Adrenal Cortex	All body systems Relieves symptoms of other diseases Treats Rheumatoid conditions allergies skin conditions eye conditions G.I. conditions others	Decadron/Hexadrol (dexamethasone) Oral, into joint, eye ointment, topical aerosol .75-9m/day oral	No	Salt and water retention Sweating Increased appetite Vomiting Ulcer High B.P. Skin rashes Dizziness Headache	Observe for moon face, weight gain, high b.p. Take b.p. regularly. Protect resident from infections Observe for mental changes Withdraw drug slowly Give in a.m. with food Limit salt intake Watch for "Cushing's Syndrome", flushing, thinning hair, sweating
		Cortone (cortisone) Oral, eye ointment, cream 20-300 mg/daily			
		Uticort/Valisone (betamethasone) .6-7.2 mg daily			
		Cort-Dome/Cortef (hydrocortisone) 20-240 mg/day divided doses Oral, enema, eye, lotion, aerosol	No		
		(prednisone) 5-60 mg/day divided doses Administer alternate days			
		Medrol (methylprednisolone) 4-48 mg/day divided doses Enema, oral, ointment			

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Hormones Thyroid	Thyroid affects whole body - metabolism, physical and mental activity	Thyrar/S-P-T (thyroid) 65 mg/day initial increased 65 mg q month until desired level	No	Palpitations Nervousness Tachycardia Headache Diarrhea Sweating Tremors Insomnia Allergic skin reationns, may be result of too rapid increase in dosage, REPORT	Store drug in dark Always begin with small dosages, gradually increased Drug should be taken regularly even though no symptoms Take pulse regularly during increase
		Synthroid/Noroxine/Levoid/ L-thyroxine/Levothroid (levothyroxine sodium - T_4) .1 mg daily initial increased by .05 mg q 1-3 weeks til desired dose	No		
		Proloid (thyroglobulin) Small amount initial increased 1-2 week intervals 32-200 md/d. maintenance	No		
		Cytomel/Cytomine (liothyronine sodium - T_3) 25 mcg/day initial increase by 12.5 mcg/day q 1-2 weeks	No		
Antithyroid	Propylthiouracil is an antithyroid drug	Propylthiouracil (proply-thyracil) 300 mg daily	No	Nauseau Vomiting Skin rash Headache	Used in hyper-thyroidism

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Hormones	Female sex hormones Estrogens - relief of menopause symptoms relief of osteoporosis symptoms Prostate cancer treatment in males Breast cancer Birth control Can enhance effects of corticosteroids	Tace (chlorotrianisene) 12-25 mg/day for 30 days - recycle	No	Nausea Fluid retention Midcycle bleeding Breast tenderness	Be alert for sign of embolisms such swelling Use cautiously in hypertension, coronary disease, epilepsy. Regular pap smears Administer 3 weeks, off 1 week whenever possible
		Premarin/Ovest (conjugated estrogens) .3-1.25 mg daily menopause 10 mg tid breast cancer 1.25 - 2.5 mg tid prostate cancer	No		
		Estratab/Evex/Menest (esterified estrogens) (estron) used in birth control			
		Provera (medroxyprogesterone) 5-10 mg for 5-10 days to treat secondary uterine bleeding or ... bleeding		Insomnia Depression Fatigue	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Hormones Birth Control	Female sex Progestins controls abnormal uterine bleeding treats endometriosis cancer of breast birth control	Delalutin/Hydrosterone/ Hylutin (hydroxyprogesterone) I.M. only		Fluid retention Break through bleeding	Watch for thromboembolism, chest pain, leg pain. Periodic check-ups Give with food Discourage smoking
		Megace (megestrol acetate) 40-80 mg qid breast cancer			
		Norlutin/Nor-Q.D. (norethindrone) 10 mg daily for 2 weeks endometriosis .35 mg daily contraception for 3 weeks, off 5 days			
		Ovrette (norgestrel) contraception			
Hormone Birth control	Female Sex combination of estrogens and progestins	Ortho-Novum (norethindrone mestranol)	No	Mental depression Thrombophylebitis Nausea Vomiting Rash Break through bleeding	
		Loestrin (norethindrone ethinyl estradiol)	No		
		Lo/ovral, Ovral norgestrel/ethinyl estradiol	No		
		Modicon (estrogen and progesterone) as directed	No		
		Demulen Birth control as directed	No		

XIII. Drugs That Affect the Mucous Membrane and Skin



Functions	Drug Families	Related Diseases
Protection	Antibiotics (topical)	Psoriasis
Regulates body temperature	Antifungals	Skin infections
Excretes waste	Antihistamines	Acne
	Antipruretics	Scabies
	Astringents	Wounds
	Corticosteroids	Decubiti
	Emollients	
	Irritants	
	Keratolytics	
	Scabicides	

As mentioned in the last unit, the skin is also considered a sensory organ; however, for our purpose we will discuss it separately and include mucous membranes in the discussion.

The skin is the special tissue that covers the outer body. There are three main layers of the skin: 1) epidermis or outer layer, 2) dermis or the second layer that contains blood vessels and nerves, and 3) subcutaneous tissues, the inner layer which has fatty deposits. The skin: 1) protects deeper tissues from invasion of micro-organisms, 2) regulates body temperature by allowing cooling through sweat evaporation, 3) excretes waste products, and 4) sends information to the rest of the body about the environment.

One of the major conditions that affects the skin is infection. Bacteria or fungi enter cuts or breaks in the skin and cause an infection which results in redness, swelling and soreness. Topical antibiotic or antifungal agents are often used to slow the growth of the micro-organisms. Antiseptics are often used to prevent the growth of the bacteria.

In an allergic reaction, the skin often reacts with hives or itching. Antihistamines and antipruretics are given to relieve this symptom.

Acne and boils are common skin problems. Astrigents, keratolytics and antibiotics are given to relieve acne. The antibiotics for this condition are often given for two weeks, discontinued for two weeks, etc.

Acute or chronic skin inflammations may be treated by corticosteroids. Recall--they relieve the symptoms, but do not cure the disease.

Elderly persons often have problems with dry skin. Emollients are used to soften and moisten the skin.

Persons who are confined to bed can develop bedsores or decubitus ulcers. These are treated with drugs to debride the dead tissue.

Local antisthetics are sometimes used on the skin to control pain of burns, scrapes or sores. These are used also to control pain of hermorrhoids and they come as rectal suppositories.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antiseptics	Skin Used for cleaning skin	Hydrogen Peroxide use as directed Phisohex (hexachlorophene) scrub as needed (iodine) 1-3 times daily as needed Alcohol Apply as directed to skin Merthiolate liquid apply carefully		None	Keep out of eyes
Anti-infectants Topical	Skin	Neosporin (bacitracin) Ointment or aerosol tid-qid Mycolog (gramicidin) cream ointment tid see oral anti-infectants	No	None	Report irritation or allergic reactions

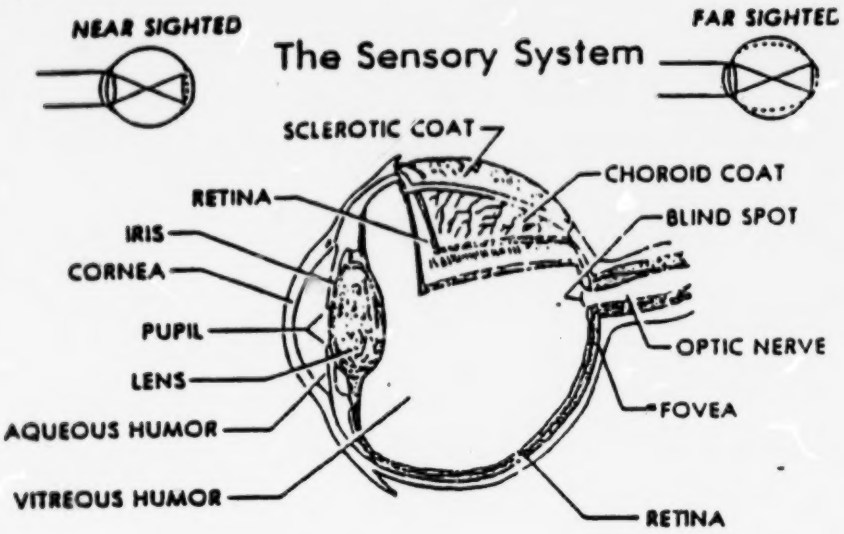
Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antifungals	Kills or inhibits growth of fungus that is causing disease	Fungizone (amphotericin) 3% cream topical also see antibiotic	No	Rarely	
		5 FC (flucytosine) 50-100 mg/kg weight q 6 hrs Oral	No	Anemia Blood dyscrasia G.I. upset	Culture and sensitivity test before giving I & O
		Fulvicin (griseofulvin) 250-500 mg daily	No	Low incidence headache Insomnia G.I. upset	Give after meals
		Mycostatin (nystatin) 500,000 - 1,000,000 U tid Oral, Vag suppository, topical	No	Usually mild nausea and vomiting Diarrhea	
		Desenex (undecylenic) Apply liberally bid	No	None	None
		Tinactin (tolnaftate) Topical bid cream, lotion, powder	No	Irritation	Do not put in eyes

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Antipruretics	Skin Nervous system Relieves itching	Periactin (cyproheptadine hydrochloride) antihistamine 4 mg tid	No	Drowsiness Dizziness Faintness Headache	Do not drive or use alcohol
		Temaril (trimeprazine tartrate) 2.5 mg qid (antihistamine) Oral	No	Drowsines Dizziness Dry mucous membranes G.I. upset	
		calamine lotion topically applied	No	None known	
		caladryl topical	No	None known	
		Florone (diflorasone) apply 2-3 times daily	No	None	
Astrigents	Chemicals that shrink tissue to stop flow of secretions	calcium hydroxide topical cream	No	Skin irritant	
		zinc sulfate topical cream	No	Skin irritant	
		Vinegar solution Apply as needed	No	None	

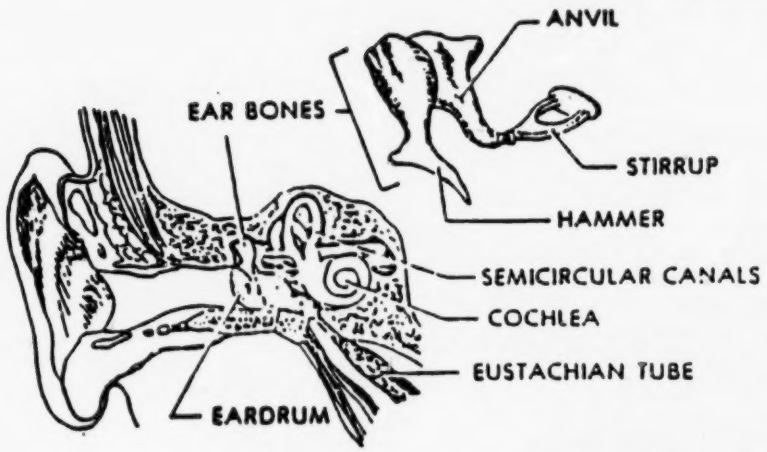
Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Corticosteroid	Hormone used topically to relieve acute and chronic inflammation	Aristocort/Kenalog (triamcinolone) creams, lotions, foam	No	Very minimal if used topically	
		Kenacort (triamcinolone diacetate)	No		
		Carmol cream 20% (hydrocortisone) Cream - topical	No		Apply sparingly
		Elocon (mometasone furoate) cream 0.1% - or ointment 1%			Do not use occlusive dressing
Emollients	Oily substance to keep skin soft	Vaseline, Petrolatum White Topical	No	None	
		Ointment - Yellow Topical	No		
		Olive oil Topical	No		
		Vitamin A and D ointment	No		
Anesthetic Local	Control discomfort and pain	Solarcaine (benzocaine) Apply as directed	No	Rash	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Keratolytics	Skin Anti-acne	Fostex (salicyclic acid) 1-2 daily shampoo, soap (resorcinol) apply bid		Stinging Burning	
Anti-acne		Retin A (tretinoin) cream - gel lightly over affected areas h.s.	No	Redness Edema	Sensitive to sunlight
Demulcents	Skin Protective agents to relieve irritation	Aspergum as needed Aveeno as needed - may be used in bath Starch as needed Unno boot (zinc)			
Lice	Kills lice and scabies Use shampoo only as directed by doctor - generally only every two months	Kwell (lindane) Cream or lotion Apply after hot, soapy bath Rub in well, leave on 12 hours Kwell Shampoo (lindane) Shampoo - leave on 4-5 minutes and wash out	No	Irritation Redness Eczema Toxicity (convulsions)	Do not apply to face Avoid contact with eyes

XIV. Drugs That Affect Eyes and Ears



Function	Drug Families	Related Diseases
Sense of sight	Antibacterial	Cataracts
	Lubricant	Glaucoma
	Miotics	Infections
	Mydriatic	Injuries
		Diabetes
		Blepharitis
		Sties
		Tear duct problems



Function	Drug Families	Related Diseases
Sense of hearing	Antibiotics	Infection
Balance	Antiemetics	Loss of hearing
	Antihistamines	Wax build-up
	Diuretics	Dizziness
	Lubricants	Osteoarthritis

XIV. Drugs that Affect Eyes and Ears

The sensory system is often discussed with the nervous system because the organs of the sensory system (skin, eye, ear, nose and taste buds) send and receive messages through the nervous system network.

The eye is the organ of the sensory system that provides vision. Brain damage and the aging process can affect the vision. The two most common vision problems are "nearsightedness" and "farsightedness," These conditions can be corrected with glasses.

The eyes may become infected and inflammed. Eye infections are often treated with antibiotic eye creams or drops.

Cataracts are another condition of the eye frequently occurring as part of the aging process. A cataract occurs when the lens of the eye becomes opaque. Cataracts are a leading cause of blindness. The condition can now be treated by surgical removal of the lens. Eye drops are often used before and after the surgery.

Glaucoma is a condition of the eye when pressure within the eyeball is higher than normal. If the condition is not treated, it may lead to blindness. Glaucoma is often treated with a group of drugs called Miotics. These drugs contract the pupil (make it smaller). Many of these drugs also reduce the fluid and pressure inside the eye. These drugs often cause stinging and burning when administered.

The eyes are sometimes affected by a condition where the tear ducts do not function. Artificial tears or a lubricant must be inst'lled in the eyes to keep them moist.

The tissue of the eye absorbs medication very rapidly so these drugs must be administered carefully and properly. Eye medications are often called ophthalmic solutions and are given by eye drops, eye washes, or in ointments or dressings applied. Never put any medication into the eye that is not labeled for ophthalmic or eye use. Some eye medications should be refrigerated. Check the label.

Eye medication should be kept sterile (free from bacteria). When administering these medicines, you must be extra careful not to contaminate the dropper, tube, etc.

Some eye medications sting or burn when given. Explain this to the resident so they do not become frightened when medication is given.

The ear is the sense organ that provides sound and helps maintain balance. As with the eye, brain damage and the aging process can affect hearing.

Infections of the ear are common. These infections are caused by bacteria or fungus. Anti-infective and anti-inflammatory drugs are often given into the ear to treat these conditions.

Ear glands produce wax (cerumen). This wax often builds up in the ear and interferes with hearing. There is a group of drugs, ceruminolytic agents, that aid in the removal of this wax. They are given directly into the ear as drops.

Meniere's Disease is a condition of the inner ear that causes dizziness, hearing loss, a ringing in the ear, nausea and vomiting. it is often treated with antihistamines and antiemetics.

Ear medications should be marked for ear administration. The word "Otic" is often used to mean ear. They must be given according to the correct procedure.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Ophthalmic or Eye Medication Antibacterial	Eye - Use only those drugs labeled for eye Kill or inhibit the growth of bacteria	Dendrid/Herplex (idoxuridine) gtti q hr during day 0.5% cream q 4 hr Used for herpes simplex	No	Burning Irritation	Avoid contaminating dropper tip Apply light pressure for one minute after instilling drops
		Neosporin (bacitracin) drops - 1-2 times bid ointment - 1-3 times daily			Report immediately if redness irritation or itching occurs
		Cantrisin/Sulfizin (sulfisoxazole) Ophthalmic - 1-3 gtts q 1-4 hrs or small amount of ointment 3-4 times daily	No	Very few	Report first signs of local irritation Keep applicator
		Sodium Sulamyd (sulfacetamide sodium) 1-2 gtts q 1-2 hours Ointment - apply at noc	No	Very few	Report allergic reactions Keep container sterile
		Visine as directed	No	Very few	
Ophthalmic Solution Lubricants	Eye	Murine/Visine (tetrahydrozoline) 1-2 gtts 2-3 times/day	No	None	None
		Artificial tears gtts as ordered	No	None	None
		Liquifilm tears (polyvinyl alcohol) gtts as needed			

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Ophthalmic Solutions Mydriatics	Eye Drugs that dilate (enlarge) the pupil Used for eye exams--to relax eye muscles in acute inflammation	Isopto Atropine (atropine sulfate) Sol - 1-2 gtts tid Ointment - small amount bid	No	Local irritation Dermatitis	Do not use with glaucoma. Systemic affects (dry mouth, flushing, thirst rapid pulse, confusion) can occur in elderly and children
		Isopto Homatropine (hometropine hydrobromide) 1-2 gtts - repeat as necessary	No		
Ophthalmic Solutions Miotics	Eye Drugs that constrict (make smaller) the pupil. Often used an anti-glaucomatous agents	Miochol (acetylcholine chloride) 1-2 gtts bid-tid	No	Stinging Burning Tearing Lid muscle twitch Systemic- Salivation Nausea Vomiting	Keep applicator sterile. Compress eye lacrimal gland 1-2 minutes to prevent drainage to nose
		Phospholine (echothiophate iodide) 1-2 gtts bid	No		
		Floropryl (isoflurophate) 1/2 inch oint bid-tid	No		
		Eserine (physostigmine) 1-2 gtts bid-tid small amount ointment to lower lid	No		
		Pilofrin (pilocarpine nitrate) 1-2 gtts bid-qid	No		
		Timoptic (timolol) 1 gtt in each eye	No	Irritation Allergic reaction	

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Otic drugs (ear) Anti-infective	Ear	Cortisporin (polymyxin B sulfate) 2-3 gtts tid-qid	No	Very few	Warm, but do not overheat before giving Avoid contamination of applicator. Instill with canal open - hold position for a few minutes after giving
		Neo-cortef (neomycin sulfate) 3-4 gtts tid qid	No		
		Garamycin (gentamicin) drops or ointment as directed	No		
Otic drugs (ear) Ceruminolytic	Ear Aids in removal of wax	Debrox (carbamine peroxide) 5-10 gtts bid	No	Redness Irritation	
		Cerumenex (triethanolamine polypeptide aleate-condensate) Fill ear canal, plug with cotton, wait 15-20 minutes	No		

XV. Miscellaneous Drugs

Following are some drugs that do not fit entirely into any one family. These drugs, however, do provide assistance.

Drug Family	Action/Systems Affected General Precautions	Drug Brand Name (generic name), Usual Dosage, Route	Controlled Substance (Schedule)	Side Effects	Special Precautions
Spasmolytic (antispasmodic on bladder)		Ditropan (oxybutynin chl) 5 mg tid	No	Nausea Vomiting Dry mouth Burred vision	Use with caution with geriatrics
Alcohol Treatment	Prevents ingestion of alcohol	Antabuse (disulfiram) 500 mg bid	No	Drowsiness Headache Restlessness	Alcohol intoxication
Smoking deterrant		Nicatine patch	No	Nausea Dizziness Irritability Headache	Do not smoke

Study Questions for Unit IV

1. What should you do if a child drinks window cleaner?

2. If you suspect a resident has been drinking or taking drugs while on a home visit, would you give them the ordered Mellaril?

3. A boy has been receiving Tetracycline 250 mg twice a day for acne. He now has a sore throat and the doctor orders Erythromycin 250 mg four times day day. What should be done, if anything?

4. A new resident is taking Cylert 75 mg daily and comes to you complaining of headache and sleeplessness. What is your next step?

5. A girl has had a cold and congested nose and was given a Contact at 8:00 a.m. She comes to you at noon and says that the medication hasn't helped and could she have another one. Will you give it to her?

6. A boy confesses that he was given five capsules at school called Christmas trees. He has taken all five of them over the course of the day. What should you do?

Use the drug information to complete the following questions:

7. A resident has aspirin two tabs ordered whenever necessary for pain. The resident complains of headache. What should you do before giving the aspirin? What side effects might occur? How can you possibly prevent the side effects?

8. An adolescent resident is on Dexedrine 10 mg every A.M. Where will you find Dexedrine? What is the probable reason the Dexedrine has been ordered?

9. Imipramine 10 mg is ordered at hour of sleep for a resident. Why might it have been ordered? What side effects might occur?

10. A resident is on Phenobarbital and Diamox. For what reason are these drugs ordered? If the problem is controlled, can the drug be discontinued?

11. A resident has 200 mg Somophyllin ordered every 6 hours. What condition is this drug used for? What are the side effects?

12. You are in the process of giving a resident an ordered Ampicillin medication. The resident shows you a rash. How should you handle this?

UNIT V

Clinical Evaluation

Now that you have completed the classroom and laboratory experiences, it is time to practice your new skills. The practical or skill evaluation will be supervised by an R.N. It will be conducted either in the laboratory or at your clinical site. The setting for the clinical will be determined by your instructor.

Following are three types of clinical evaluations. Two are general and can be used for all types of nonparenteral medications that you give. The other is more specific and there is a checklist for each route (oral, rectal, otic, etc.). Your instructor will determine which evaluation will be used. You must complete a self-evaluation and the instructor will complete the other.

SELF-EVALUATION

Administration of Nonparenteral Medication by Non-Licensed Personnel

Skill Demonstration

A licensed personnel must verify that she/he had personally observed the non-licensed personnel perform the following tasks and considers the individual ready to begin non-supervised activities. The proper methods are explained in the handbook.

	Licensed Personnel's Verification Via Initials
I. Procedure for Administrating Oral Medication	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights (right resident, medication, dosage, time, route, charting)	_____
E. Administers the medication using proper technique, ensures that the resident swallowed the medicine.	_____
F. Records medication administration.	_____
II. Procedure for Administrating Topical Medication (Skin Medication)	
A. Assembles necessary equipment.	_____
B. Uses clean techniques (e.g, washes hands).	_____
C. Reads and understands label.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____
III. Procedure for Administering Eye Drops	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____

IV. Procedure for Administering Eye Ointment	Licensed Personnel's Verification Via Initials
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____

V. Procedure for Administering Ear Drops	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Positions resident properly	
F. Administers the medication using proper technique.	_____
G. Records medication administration.	_____

_____ _____
Signature of Non-Licensed Personnel Date

_____ _____
Signature of Licensed Personnel Date

INSTRUCTOR EVALUATION

Administration of Nonparenteral Medication by Non-Licensed Personnel

Skill Demonstration

A licensed personnel must verify that she/he had personally observed the non-licensed personnel perform the following tasks and considers the individual ready to begin non-supervised activities. The proper methods are explained in the handbook.

	Licensed Personnel's Verification Via Initials
I. Procedure for Administrating Oral Medication	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights (right resident, medication, dosage, time, route, charting)	_____
E. Administers the medication using proper technique, ensures that the resident swallowed the medicine.	_____
F. Records medication administration.	_____
II. Procedure for Administrating Topical Medication (Skin Medication)	
A. Assembles necessary equipment.	_____
B. Uses clean techniques (e.g, washes hands).	_____
C. Reads and understands label.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____
III. Procedure for Administering Eye Drops	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____

IV. Procedure for Administering Eye Ointment	Licensed Personnel's Verification Via Initials
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Administers the medication using proper technique.	_____
F. Records medication administration.	_____

V. Procedure for Administering Ear Drops	
A. Assembles necessary equipment.	_____
B. Uses clean technique (e.g., washes hands).	_____
C. Reads and understands labels.	_____
D. Verifies the six rights.	_____
E. Positions resident properly	
F. Administers the medication using proper technique.	_____
G. Records medication administration.	_____

_____ _____

Signature of Non-Licensed Personnel Date

_____ _____

Signature of Licensed Personnel Date

GLOSSARY

Absorption (ab sorp' shun) - The passage of a substance into the blood stream.

Abuse - See drug abuse.

ac - Latin abbreviation meaning before meals.

Action - Chemical body changes that occur as a result of taking a medication.

Acute (ah kūt') - A disease with a short but severe course.

ad lib - An abbreviation for whenever desired.

Addiction (ah-dik' shun) - A state of repeated use of a drug which causes an overwhelming need (physical and emotional) for the substance.

Adverse reaction - Unexpected or dangerous drug effect.

Aerosol (a' er o sol') - A substance which can be atomized into a fine mist.

Alcohol (al' ko hol) - A transparent, colorless, liquid which can be used to mix medications/oral or topical.

Allergy (al' er je) - A hypersensitive reaction acquired through exposure to a foreign body such as drugs.

Amphetamine (am-fet' ah-min) - A group of stimulant drugs. This group is commonly abused.

Analgesic (an al je'zik) - A substance that relieves pain without causing unconsciousness.

Anaphylaxis (an ah fi lak' sis) - An extreme allergic reaction. Respirations are restricted. Unless treated, it can lead to death.

Anorexia (an o rek' se ah) - Lack or loss of appetite.

Antacid (ant as' id) - A substance that counteracts acidity; neutralizing acids of stomach.

Antagonist (an tag' o nist) - A substance that tends to nullify or work against other drugs.

Antibiotic (an ti bi-ot' ik) - A drug that inhibits the growth or kills bacteria.

Anticonvulsant (an ti kon vol 'sant) - Drugs that decrease or prevent seizures.

Antidepressant (an ti dē pres' sant) - Drugs that prevent or treat depression.

Antidiarrheal (an ti di ah rē' al) - Drugs that treat diarrhea or loose stools.

Antiemetic (an ti ē met' ik) - Drugs that decrease or prevent nausea and vomiting.

Antifungal (an ti fung' gal) - Drugs that kill or prevent growth of fungi.

Antihistamine (an ti his tah' min) - Drugs that treat effects of histamine, which is believed to cause allergies. Also used as antinauseants.

Anti-inflammatory (an ti in flam' ah to re) - Substances that treat the swelling of tissue.

Antipruritic (an ti pro rit' ik) - Drugs that relieve itching.

Antipyretic (an ti pē ret' ek) - Drugs that are effective in treating fevers.

Antiseptic (an ti sep' tik) - A substance that inhibits the growth of bacteria.

Antispasmodic (an ti' spaz mod ik) - A substance that relieves or prevents muscle spasms.

Antitussive - (an ti tus' iv) - A substance that decreases cough.

Anxiety (ang zi' e te) - A feeling of uneasiness, fear or apprehension.

Appendicitis (ah pen di si' tis) - Infection inflammation of the appendix, an outgrowth of large intestine.

Artery (ar' ter e) - Vessel that carries blood. Leads away from the heart.

ASA - Abbreviation for acetylsalicyclic acid (Aspirin).

Asthma (as' mah) - Disease marked by recurrent attacks of difficulty breathing, and wheezing. Due to spasms of the bronchi.

Astringent (ah strin' jent) - Substances that tighten pores.

Ataxia (ah tak' se ah) - Condition where muscles are not coordinated. May be a reaction to some drugs.

Athlete's Foot (ath 'lēts) - Fungus infection of the feet.

Automatic Stop Order - A policy whereby a resident's medication is automatically discontinued if not re-ordered by the physician.

Bacteria (bak te're ah) - Forms of plant life found nearly everywhere. Some bacteria cause disease.

Barbiturate (bahr bit' u rāt) - A group of drugs that relax or induce sleep. They depress the central nervous system in various degrees. Most are controlled substances.

bid - Abbreviation for twice a day.

Blood (blud) - Fluid that circulates throughout the body. It is the main means of transport in the body.

Blood pressure (b.p.) - The pressure of the blood against the blood vessel walls.

Bronchodilator (brong ko-di-la' tor) - Substances that relax and enlarge bronchiolus.

Bronchus (brong' kus) - Any of large passages through which air passes to the lung.

Ca - Symbol for calcium, a mineral.

Capsule (cap' sūl) - A dissolvable container holding a dosage of a drug.

Caps - capsule.

Cardiac (kar 'de ak) - The heart.

Cardiovascular System (kar de o vas' ku lar) - Refers to the heart and blood vessels.

Cathartic (kah thar' tik) - A drug that causes bowel evacuation.

c.c. - Abbreviation for cubic centimeter. If may be used interchangeably with milliliter.

Chemical name - The drug name given by the chemist, describes chemical substance.

Chemotherapy (ke mo ther'ah pe) - Treatment of illnesses by chemical means. Some drugs are chemotherapeutics.

Chronic (kron' ik) - Condition that lasts a long time.

Circulation (ser ku la' shun) - Movement of blood through the heart and blood vessels.

Clotting (klot' ing) - Formation of substance within wall of blood vessel stopping blood flow.

CNS - Central Nervous System - Consisting of brain and spinal column.

Coagulant (ko ag u lant) - Substances that promote formation of a clot.

Colon (ko 'lon) - Part of the large intestine.

Comatose (ko' mah tōs) - A state of unconsciousness from which one cannot be awakened.

Congenital (kon jen' i tal) - Present at birth.

Constipation (kon sti pa' shun) - A condition in which waste matter in the bowel is hard to pass.

Constriction (kon strik' shun) - Narrowing of a part.

Contraindication (kon trah in di ka' shun) - Any condition that makes the giving of a drug dangerous or undesirable.

Controlled Substance Act - Federal legislation that regulates manufacture, sale and use of abused drugs.

Controlled Substances - Potentially dangerous or habit forming drugs whose sale and use is controlled by federal legislation.

Convulsion (kon vol' shun) - Involuntary contractions of muscles usually accompanied by loss of consciousness.

Cubic Centimeter - liquid measure equal to a milliliter (cc).

D.C. - abbreviation for discontinue.

D.E.A. - Abbreviation for Drug Enforcement Administration.

Decongestant (de kon jes' tant) - Drugs that reduce swelling and congestion of nasal membranes. These drugs can be inhaled, given as spray or taken orally.

Deficiency (de fish' en se) - A condition in which there is a lack or shortage of a substance generally well supplied - such as a vitamin deficiency, hormone deficiency.

Dependency (de pen' den se) - The physical/psychological need for a drug. Withdrawal symptoms often occur when drug is stopped.

Depressant (de pres' ant) - A drug that slows down normal functioning or activity.

Dermis (der miss') - The skin.

Detergent (de ter' jent) - A drug that purifies or cleanses.

Diabetes Mellitus (di ah be' tēz) - A disease in which the pancreas does not produce enough insulin to use carbohydrates. Symptoms include elevated blood sugar and sugar in the urine.

Diagnose (dī' ag nos) - The process of determining or identifying a disease. The physician is the health professional qualified to do this.

Diarrhea (di ah re' ah) - The rapid movement of waste material through intestine. Generally the material is semi-liquid or liquid.

Digestion (di jes' chun) - The process of converting food into its various parts that can be absorbed into blood, carried to the body cells and used to maintain life.

Dilatation (dil ah tah' shun) - The condition in which an opening (eye pupil, blood vessel) is opened or enlarged.

Disease (di zez') - A morbid condition existing that is not normal with an accompanying set of symptoms.

Disinfectant (dis in fek' tant) - Substances that destroy infection producing organisms.

Diuretic (di u ret' ik) - A family of drugs that increases urine output thus relieving tissue swelling (edema).

Dizziness (diz' i nes) - A feeling of unsteadiness, sensation of movement within the head.

Dosage (do' sij) - The size, frequency and amount of a medication to be given.

Drop (drop) - A small circle of liquid as it hangs or falls.

Drug - Any substance that is given as an aid to diagnosis, prevention, treatment, replacement, alleviation of symptoms in disease conditions.

Drug Abuse - The taking of drugs to get "high" or when any drug is taken to excess and it interferes with normal functioning.

Eczema (ek' se mah) - A condition in which there is inflammation of skin. The skin is red, itches, often oozes and crusts.

Edema (e de' mah) - An abnormal accumulation of fluid in the tissue which causes swelling.

Elixir (e lik' ser) - A clear sweetened alcohol preparation containing a drug. abbreviation elix.

Emollient (e mol' yent) - A substance that soothes and softens.

Enteric Coated (en ter' ik) - A special coating put on tablets which prevents release and absorption until the drug reaches intestine.

Epilepsy (ep' i lep se) - A disease of nervous system characterized by convulsive seizures.

Estrogen (es' tro jen) - The female sex hormone produced by ovaries.

Euphoria (u for' re ah) - A false feeling of well being.

Excrete (ek skrēt') - To separate and eliminate or discharge from blood or tissue.

Expectorant (ek spek' to rant) - A subtance that loosens secretions and allows them to be coughed up.

External (eks ter' nal) - Situated or occurring on the outside.

Extract (ek' strakt) - A concentrated preparation of a drug. Abbreviation ext.

F.D.A. - Food and Drug Administration; enforcement agency.

Feces (fe' sēz) - Waste discharged from intestines.

Ferrous (fer' us) - Substance containing iron.

Fever (fe' ver) - Abnormally high body temperature.

Fluid Balance - A state when amount of body water and elements (electrolytes, etc.) are within normal.

Flushed - Redness of the face and neck.

Food and Drug Administration (F.D.A.) - An agency of H.E.W. whose principle purpose is to enforce the Federal Food Drug and Cosmetic Act.

Fungicide (fun' ji sīd) - An agent that kills fungus.

Fungus (fun' gus) - A name given group of yeast, moldlike plants found in soil, air, water. A few cause diseases such as ringworm, athletes' foot, histoplasmosis and thrush.

Gall Bladder (gawl' blad er) - Organ located below liver that stores bile.

Gargle (gar' gl) - A solution for rinsing mouth and throat.

Gastric (gas' trik) - Pertaining to stomach.

Generic Name - Name given to a new drug by manufacturer and must be approved by AMA and WHO. A drug can have only one generic name.

Gland - A cellular structure specialized to secrete substances (hormones) necessary for body functioning.

Glaucoma (glaw ko' mah) - A group of eye diseases where there is increased pressure which changes the ability to see and if not treated leads to blindness (miotics are drugs of choice).

Glucose (gloo' kōs) - Simple sugar found in blood stream.

Goiter (goi ter) - Enlargement of thyroid gland. Usually caused by lack of iodine.

Grain (grān) - The smallest measure of weight in the apothecary system. Abbreviation gr.

Gm - Abbreviation for gram.

Gram (gram) - Basic unit of weight in metric system. Abbreviation G., g or gm.

gtt. - Abbreviation for drop.

Habituation (hah bit u-a' shun) - A condition caused by repeated use of a drug. When drug is removed there are physical and emotional symptoms.

Harrison Narcotic Act - Federal law first enacted in 1915 regulating possession, sale and purchase of opium derivatives. It was replaced by Controlled Substance Act.

Hemoglobin (he mo glo' bin) - The oxygen carrying part of blood. Persons with low hemoglobin are said to be anemic.

Hemorrhage (hem' o rig) - The rapid escape of blood from broken vessel.

Histamine (his' tah min) - normal body substance. An excess seems to be released when body comes in contact with substances to which it is sensitive. The excess causes sneezing, rash, hives and other allergies.

Hives (hīvz) - Red swelling of the skin that itches and burns (urticaria).

Hormone (hor' mōn) - A substance produced mainly by the glands, transported by bloodstream. Hormones regulate body processes.

h.s. - Abbreviation for hour of sleep.

Hyperactivity (hi per ak tiv' i te) - Abnormally increased activity or excessive secretion.

Hypertension (hi per ten' shun) - High pressure of blood exerted against vessel wall. Vessels are constricted.

Hypnotic (hip not' ik) - Agents that produce sleep.

Hypodermic (hi po der' mik) - Medication given beneath the skin.

Hypoglycemia (hi po glī se' me ah) - An abnormally low blood sugar.

Hypotension (hi po ten' shun) - Low pressure exerted by blood against blood vessel. Vessels are dilated (large).

Idiosyncrasy (id e o sing' krah se) - An abnormal individual reaction to a drug. e.g., a drug that calms most people may cause excitement in selected individuals.

I.M. - Intramuscular - Injection of a substance given into the muscle.

Immunization - (im u ni za' shun) - The process of making a person resistant to a disease.

Incoordination (in ko ar di na' shun) - Lack of normal muscle activity.

Indication (in di ka' shun) - Conditions for which a drug may be used.

Infection (in fek' shun) - A disease process cause by microorganisms. Inflammation occurs as a result.

Inflammation (in flah ma' shun) - Local response to invasion of micro-organisms. There is fluid accumulation, redness, swelling and the area is warm to touch.

Inhalation (in hah la' shun) - Method of giving a drug (vapor) by breathing in.

Injection (in jek' shun) - The forcing of a liquid substance into a part. A needle and syringe are used. Types of injections are intramuscular, subcutaneous, intravenous.

Insomnia (in som' ne ah) - Being unable to sleep.

Instillation (in sti la' shun) - Administering of a liquid by drop. Usually in eye or ear.

Insulin (in' su lin) - A hormone produced by pancreas gland secreted into blood stream to metabolize glucose. In Diabetes Mellitus insufficient amounts are secreted and insulin must be given. Insulin is only given by injection because in the oral form it is destroyed by digestive juices.

Irritant (ir' i tant) - A substance that stimulates or excites.

I.V. - Intravenous.

Jelly (jel' e) - A soft spreadable substance.

Lanolin (lan' o lin) - Wool fat or wool grease that is used in some drug products.

Laxative (lak' sah tive) - An agent that assists in passage of fecal material from the bowel.

Lethal Dose (le' thal) - The amount of a drug that will cause death.

Liniment (lin' i ment) - A drug preparation in an oily, soapy, or alcoholic preparation to be rubbed on the skin.

Liquid (lik' wid) - A preparation that flows easily.

Louse (lous) - Name of parasitic insect. Lice live on hosts blood and tend to attach self to hair.

Lozenge (loz' enj) - A medicated tablet that is dissolved in the mouth.

m - Abbreviation for minim.

Medicine (med' i sin) - A substance used for diagnosis, treatment and relief of symptoms of diseases.

Microorganism (mi kro or' gan izm) - An organism that can be seen under a microscope. They include bateria, rickettsia, virus, fungus and protozoa.

Milk - A liquid combination with a drug (emulsion or suspension) which is white in appearance.

Mineral (min' er al) - Substance naturally occurring in nature. Minerals are also electrolytes.

Mixture (miks' tur) - A combination of different drugs.

Mucus (mu' kus) - Fluid like secretion of mucous membrane.

Na - symbol for salt.

Narcotic (nar kot' ic) - Drugs that are opium-like derivatives. These drugs depress the CNS and are addictive. Most are used as analgesics and since they are prone to abuse, they are a controlled substance.

National Formulary (N.F.) - A book of standards for pharmaceutical preparations not included in United States Pharmacopeia. Revised every five years and recognized as book of official standards by Pure Food and Drug Act. Abbreviation is N.F.

Nausea (naw' se ah) - An uncomfortable sensation of G.I. tract with a tendency to vomit.

Nebulizer - (neb' u līz er) - A device for applying a spray.

NPO - Abbreviation for nothing by mouth.

Nonparenteral (non pah ren' ter al) - Method of administering drugs that that does not penetrate skin--oral, sublingual, rectal are nonparenteral.

O.D. - Abbreviation for right eye.

Official Name - Drug name printed in United States Pharmacopeia.

Ointment (oint' ment) - Semisolid preparation for external application to the body, such as vaseline.

Oral (o' ral) - Giving a medication by mouth.

os - Abbreviation for mouth.

O.S. - Abbreviation for left eye.

O.T.C. - Abbreviation for over the counter drugs. Do not need a prescription to buy.

O.U. - Abbreviation for both eyes.

Pain (pān) - A feeling of agony or distress caused by stimulant of special nerve endings. Its purpose is mainly for protection. It acts as warning that body tissue is being damaged.

Pallor (pal' or) - Paleness of skin.

Palpitation (pal pi ta' shun) - Rapid heart beat.

Parasite (par' ah sīt) - Plant or animal that lives on another.

Parenteral (pah ren' ter al) - Given by injection.

Parkinsonism (par' kin sun izm) - A disorder with parkinson symtpoms--masklike face, fine tremor of extremities, sliding gait.

p.c. - Abbreviation for after meals.

Pediculicide (pe dek' u li sid) - An agent that destroys lice.

Peripheral (pe rif' er al) - Nerves outside the brain and spinal cord.

Peristalsis (per i stal' sis) - The involuntary wavelike contraction of the G.I. tract and other hollow structures to move contents.

Per os - Abbreviation for by mouth.

Pharmaceutical (far ma su' ti kal) - A drug preparation.

Pharmacist (far' mah sist) - The licensed health professional who prepares, sells or dispenses drugs.

Physician (fi zish' un) - The licensed health professional responsible for diagnosing and treating patients.

P.M. - Abbreviation for afternoon.

P.O. - Abbreviation for per os or by mouth.

Poison (poi' sun) - A substance when absorbed that causes severe damage to the body.

Potentiation (po ten she a' shun) - When two or more drugs are combined and together their effect is greater than if used alone. When a drug potentiates another, smaller dosages are needed to get the same results.

Precautions - The warnings attached to giving certain drugs.

Prescription (pre skrip' shun) - A doctor's written order for a drug. Some drugs can only be purchased with a prescription. It must contain patient's name, drug name, dosage, time to be taken and number of doses.

PRN - Abbreviation for when needed.

Pulmonary (pul' mo ner e) - Refers to the lungs.

Pupil (pu' pil) - The opening in the center of the iris.

q.d. - Abbreviation for every day.

q.h. - abbreviation for every hour.

q 2h - Abbreviation for every two hours.

qid - Abbreviation for four times a day.

Rash (rash) - Skin eruption usually temporary. May be an allergic reaction to a drug.

Relaxant (re lak' sant) - Agent that causes relaxation.

Respiration (res pi ra' shun) - The exchange of oxygen (O_2) and carbon dioxide (CO_2) in the lungs.

Saline (sa' lin) - Salt solution. Normal body fluid is 0.9% of sodium chloride.

Scabicide (ski' bi sīd) - Substance that kills mites.

Sedative - (sed' ah tiv) - A drug that calms, relieves anxiety, nervousness. Generally these agents accomplish action by depressing the CNS.

Side Effect - Drug effects other than effect for which drug is given.

Solid (sol' id) - Drug form that maintains shape.

Solution (so loo' shun) - A liquid preparation of one or more dissolved substances.

Spansule - Solid drug preparation made so parts dissolve at various times. Gives longer lasting action.

Spray - A stream of air and liquid medication given by an atomizer.

Sputum (spu' tum) - Mucous secretions in the respiratory tract, lungs, bronchi.

Standing Order - Drug order to be continued until future notice.

ss - Abbreviation for one half.

stat - Abbreviation for at once.

Sterile (ster' il) - Free from living microorganisms.

Stimulant (stim' u lant) - An agent that increases the activity - excites. Some drugs stimulate CNS.

Sublingual (sub ling' gwal) - A method of administering a drug, by letting it dissolve under the tongue.

Sulfonamide (sul fon' ah mīd) - Synthetic drug that keeps germs from multiplying.

Suspension (sus pen' shun) - A drug preparation of undissolved substances throughout a liquid. Shake well before pouring.

Symptom (sim' tom) - A sign or indication of a disease.

Syndrome (sin' drom) - A combination of symptoms coming from a single cause.

Synergist (sin' er jist) - A drug that with another enhances the effect.

Syrup (sir' up) - A concentrated solution of sugar combined with drugs to make it taste well.

tab. - Abbreviation for tablet.

Tablet (tab' let) - A solid form of a drug preparation.

Testosterone (tes tos' ter rōn) - One of the male sex hormones.

Therapy (ther' ah pe) - The method used to treat a disorder or disease.

tid - Abbreviation for three times a day.

Tincture (tingk' tur) - An alcoholic solution mixed with a drug.

Tolerance (tol' er ans) - A condition when more and more of a drug is needed to get the same effect. Usually occurs when a person has been on a medication for a period of time.

Toxic (tok' sik) - A poisonous condition.

T.P.R. - Abbreviation for temperature, pulse and respiration.

tr. - Abbreviation for tincture.

Trade Name - The special licensed name a manufacturer assigns to a drug. One drug may have several trade names.

Tranquilizer (tran' kwi li zer) - A group of drugs that calms a person who is anxious.

Tremor (trem' or) - An involuntary trembling of hands, arms and legs.

Unconsciousness (un kon' shus nes) - Lack of response to stimulation.

Urine (u' rin) - Fluid containing waste and water secreted by the kidneys.

United State Pharmacopeia (U.S.P.) - A legally recognized list of standard drugs.

Urticaria (ur ti kar' re ah) - Hives. Red eruption on the skin.

USP/DI - United State Pharmacopeia/Dispensing Information - official book for pharmacists.

Vertigo (ver' ti go) - A feeling of movement of self or surroundings, dizziness.

Vial (vi' al) - A small glass container.

Virus (vi' rus) - A minute agent that causes diseases.

Vitamin (vi' tah min) - A substance found in food products that aids in growth and health.

Vomiting (vom' it ing) - Forced ejection of the stomach contents.

Withdrawal symptoms - physical/emotional reactions that occur when a drug is discontinued that the person has developed a dependency.

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